CANAL RECORD

VOLUME 5

UNIVERSITY
OF FLORIDA
LIBRARIES

Digitized by the Internet Archive
in 2010 with funding from
University of Florida, George A. Smathers Libraries with support from Lyrasis and the Sloan Foundation

http://www.archive.org/details/canalrecord5152isth

CANAL RECORD

PUBLISHED WEEKLY UNDER THE
AUTHORITY AND SUPERVISION OF
THE ISTHMIAN CANAL COMMISSION

AUGUST 30, 1911, TO AUGUST 21, 1912

VOLUME V

WITH INDEX

ANCON, CANAL ZONE
ISTHMIAN CANAL COMMISSION
1912.

MOUNT HOPE, CANAL ZONE
ISTHMIAN CANAL COMMISSION PRINTING OFFICE
1912.

INDEX.

A

Accidents, fatal, 198, 214, 295, 351, 383, 399, 409.
Accounts, expenditure, 32, 147, 203.
Advertising on government property, 35.
Agriculture, report, 13.
Air compressors, locks, 127, 149, 245.
Air and water service, Culebra Cut, 91.
American Medical Association, C. Z. research, 358.
Amusements for employes, 157.
Appropriation Committee, visit, 82, 90.
Army, U. S., surcharge, 71.
Atlantic Division—
    Chief Clerk, appointment, 39, 251.
    Engineer, acting, 88, 331.
    Superintendent of Construction, acting, 95.
Automobile fire apparatus, 65, 165, 309.

B

Baggage contract let, 13.
Band concerts. *See each issue.*
Barges, tow around South America, 189, 309, 325, 341.
Baseball—
    New Orleans club, 187.
    Schedule, 135, 186.
    Scores, 163, 171, 180, 187, 195, 211, 227, 235, 243, 251, 259, 267, 275, 283.
    Transportation for teams, 86.
Bills, itemized, 411.
Blasting, Culebra Cut, 301, 318.
Boiler—
    Inspection, 131, 152.
    Plugs, fusible, 155.
Boundary marks, Penal Code, 411.
Boy Scouts, 27, 106.
Breakwater—
    Atlantic entrance, 1, 47, 133, 337, 401, 413.
    Cost statements, Part 2, Nos. 11, 24, 37, 50; also, Page 414, No. 52.
    Pacific entrance, 9, 73, 127, 337, 357.
    Recommendation of Board, 9.
    Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
    Signal lights, 413.
Bridge—
    Bascule, Monte Lirio, 190, 278.
    Cardenas River, damage by flood, 301.
    Culebra Cut, railroad, 357.
Bubonic plague—
    Case, 67.
    Quarantine precautions, 71, 381.
Building—
    Brazos Brook reservoir, 46.
    Sales, 64, 70, 77, 88, 89, 95, 146, 155, 205.
    School, Ancon, 46.
    Sites, permanent, 277, 359, 397, 409.
Buoys, navigation aids, 347.

C

Car repairers needed, 226.
Cargo handling, Canal terminals, 181, 280.
Castings, steel, 196, 387.
Cement—
    Check and delivery, 39.
    Cost, 17.
    Gun for applying, 237.
    Specifications, 342.
Census—
    Canal Zone, 104, 159, 179, 185, 251, 384-5.
    Panama and Colon, 12.
Central Division—
    Chagres district abolished, 420.
    Chief Clerk, acting, 420.
    Engineer, acting, 420.
    Timekeeper, acting, 420.
Chagres River—
    Discharge, yearly record, 143.
Charges River—
    Pumping station, 149, 349.
    Stages. *See each issue.*
Chairman and Chief Engineer—
    Acting, 186, 196, 322.
    Reports, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
Chapels, hospital morgues, 213.
Charcoal kiln closed, 301.
Christmas, social events, 135.
Church—
    Christmas celebration, 135.
    Protestant Episcopal Missions, 3.
    Roman Catholic Bishopric, 106, 407.
    Salvation Army Institute, 3, 94, 154.
    St. Luke's pipe organ, 154.
    Sunday School Association, convention, 94.
    Surcharge on material and labor, 251.
    Water and lighting service, 123.
    Wesleyan Methodist, 407.
    See also each issue.
Circulars, official—
    Army, U. S., surcharge, 71.
    Atlantic Division—
        Chief Clerk, 39, 251.
        Engineer, acting, 88, 331.
        Superintendent of Construction, acting, 95.
    Bills, itemized, 411.
    Boiler—
        Inspection, 131.
        Plugs, fusible, 155.
    Boundary marks, Penal Code, 411.
    Castings, shipment, 196, 387.
    Cement, check and delivery, 39.
    Census, Canal Zone, 179, 185, 251.
    Central Division—
        Chagres District abolished, 420.
        Chief Clerk, acting, 420.
        Engineer, acting, 420.
        Timekeeper, acting, 420.
    Chairman and Chief Engineer, acting, 186, 196, 322.
    Church—
        Surcharge, material and labor, 251.
        Water and lighting 123.
    Civil Administration, Dept., acting head, 322.
    Civil Service rules, amendment, 203.
    Clubhouses, Superintendent, appointment, 55.
    Coal—
        Scoop, standard, 7.
        Selling prices, 282.
        Waste in unloading, 7.
    Collector of Revenues, acting, 15.
    Commissary books for cash, 322, 347.
    Construction and Engineering, Department—
        Chief Clerk, acting, 268.
        Chief Engineer, acting, 186, 196, 322.
    Court martial witnesses, 212.
    Debts of employes, 159.
    Depot Quartermaster, acting, 48.
    Disbursing Officer, acting, 15.
    Dynamite remaining in cars, 196.
    Election, Panama, 354, 363.
    Electric current, furnishing, 307.
    Electrical Superintendent, acting, 315.
    Empire shops transferred, 331.
    Equipment—
        Dismantling and remodeling, 196.
        Overhauling and repairs, 290.
        Rates between department, 307.
        Surplus, 322.
    Estimates for 1914, 403.
    Examiner of Accounts, acting, 315, 338.
    Expenditure Accounts, 32, 147, 203.
    Expense, traveling, 363.
Circulars, official—
    Force reduction, European laborers, 48, 71, 164
    Fortifications—
        Assistant Engineer in charge, 164.
        Secrecy, 251.
    Fourth of July, celebration, 322, 338, 354.
    Freight, consignment, 95.
    Fuel, liquid, rules for use, 115.
    Geographic Board, conventional signs, 380.
    Gages, clocks, etc., shipment, 315.
    Grass cutting, 32, 140.
    Health Officer, acting, 64, 251.
    Holidays, 64, 106, 140, 212, 255, 315, 354, 411.
    Hose for cleaning floors, 164.
    Hotel Washington, 307.
    Labor train, Gatun-Culebra, 71, 196.
    Laborers—
        Clearance and identification, 55.
        Force reduction, 48, 71, 164.
    Leave, vacation, 386.
    Lights, unauthorized, in quarters, 371.
    Liquor licenses, 290, 338.
    Locomotive—
        Bearings, hot, 282.
        Injectors, 307.
        Staybolts, broken, 155, 164.
        Tools and equipment, 55, 115, 164, 212.
    Lubricants—
        Containers, 7, 268.
        Inspector, 7.
        Record, 23.
        Standard, list and prices, 7, 186, 386.
    Marine Corps, surcharge, 15, 23.
    Material, second hand, transfer, 251, 255.
    McClintic-Marshall men, employment, 64.
    Mechanical Committee, meetings, 155.
    Mechanical Division—
        Chief Clerk, acting, 131.
        Superintendent, acting, 71.
    Mechanics for temporary work, 219.
    Mileage books, half rate, 92, 147, 179, 282.
    Oil—
        Fuel, sale and use, 115.
        Inspector, 7.
        Illuminating, standard, 7.
        Lubricating. *See* Lubricants.
    Organization statements, 395, 403.
    Oxygen and acetylene gas tanks, 395.
    Pacific Division Engineer, acting, 32, 170, 420.
    Pacific Mail S. S. express service, 243.
    Pay, annual rate table, hourly men, 354.
    Pay car schedule, 371, 403.
    Pay certificates, 77, 106.
    Police and Prisons, Chief, appointment, 380.
    Port Captains, appointment, 39.
    Purchasing Agent, acting, 48.
    Quarantine officers, appointment, 64, 251.
    Quarantine, plague cases, 71.
    Quartermaster, Chief, acting, 32, 299.
    Ratings and rates of pay, 23, 32, 155, 170, 196, 219, 282.
    Reports, annual, fiscal year, 338.
    Reprimand and suspension, 155.
    Sanitary work requests, 32, 123, 140, 420.
    Sanitary Department—
        Chief Officer, acting, 123, 299.
        Assistant Chief Officer, acting, 140.
        Health Officer, acting, 64, 251.
        Quarantine Officer, acting, 64, 251.
    Scrap, French, removal and sale, 131, 147.
    Shipments, reduced rate request, 268.
    Shop—
        Employment, 55.
        Empire, transferred, 331.
        Expense percentage, 7, 123, 155, 299, 403.

- Circulars, official—
  - Sick leave and disability certificates, 331.
  - Staybolts, locomotive, broken, 155, 164.
  - Steamshovel cranemen, promotion, 420.
  - Steel castings and patterns, 196, 387.
  - Subsistence Department—
    - Chief Clerk, acting, 64.
    - Officer, 331.
  - Surcharges, material and labor, 15, 23, 71, 251.
  - Taboga Sanitarium, admission, 243.
  - Telephone calls, 212, 354, 380.
  - Termination of service forms, 140.
  - Third Division, Chief Engineer's Office—
    - Abolished, 186.
    - Assistant Engineer, acting, 32, 140.
  - Time lost, illness or injury, 354.
  - Time vouchers, silver employes, 255.
  - Train service, Saturday night, 203.
  - Transfer time, pay, 315.
  - Transportation—
    - Half rate mileage, 92, 147, 179, 282.
    - Labor train, 71.
    - Passes, card, 155.
    - Second class, 106.
    - Trip tickets, 140, 196, 212, 255, 411.
  - Traveling engineers, responsibility, 164.
  - Tungsten lamp installation, 299.
  - Vacation leave, rules and regulations, 386.
  - Washington hotel, 307.
  - Water—
    - Examination, 354.
    - Rates for steamships, 39.
    - Restrictions on use, 140, 290.
  - Wireless station, information from, 268.
  - Witnesses—
    - Court martial, 212.
    - Fourth of July disturbance, 371.
  - Work, private, by employes, 77.
  - Work reports, daily, 380.
  - Work requests—
    - Blanket orders, 307.
    - Panama railroad, 106.
    - Sanitary Department, 32, 123, 140.
- Civil Administration, Department, acting head, 322.
  - Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
- Civil Procedure, amendment, 59.
- Civil Service—
  - Admission card to examinations, 262.
  - Examinations, 27, 38, 74, 105, 145, 151, 168, 191, 202, 210, 226, 233, 247, 326, 362, 369, 406, 414.
  - Mail addressed to Board, 271.
  - Politics, participation, 168.
  - Removal of employes, 251.
  - Rules, 145, 203, 226.
- Clubhouses—
  - Fifth anniversary, 327.
  - Superintendent, appointment, 55.
  - *See each issue.*
- Coal—
  - Deposits in Canal Zone, 255.
  - Scoop, standard, 7.
  - Selling prices, 282.
  - Waste in unloading, 7.
- Coast and Geodetic Survey, Pacific approaches, 255.
- Coffee, Panama, contract, 389.
- Cold storage plant—
  - Ice cream freezers, 229.
  - Shipping platform, 229.
  - Storage space increased, 75.
- Collector of Revenues, acting, 15.
- Colon—
  - Census, 12.
  - Fill, hydraulic, 1.
  - Immigration, 222, 301, 325, 367.
  - Sewers, 5, 206.
  - Water and sewer regulations, 5.
  - Water works, plants, 393.
- Commissary books—
  - Cost of issuing, 154.
  - Sale for cash, 322, 347.
- Commissary Department, report, fiscal year, 75.
- Commissioner, Special, appointment, 43.
- Concrete—
  - Construction, lock walls—
    - Gatun, 49, 97, 109, 117, 229, 293, 321, 333, 392.
- Concrete—
  - Construction, lock walls—
    - Miraflores, 9, 33, 57, 109, 141, 205, 213, 269, 293, 294.
    - Pedro Miguel, 9, 57, 89, 109, 113, 165, 173, 290, 293.
    - Spillways. *See* totals.
  - Cost, 17, 25, Part 2, Nos. 11, 24, 37, 50.
  - Estimate, Pacific locks, 277.
  - Forms for sale, 289.
  - Mixers and handling equipment—
    - Gatun, 1, 197, 237, 245, 285, 389.
    - Miraflores, 73, 109, 117, 158, 189, 309, 399.
    - Pedro Miguel, 158, 189, 237.
  - Three million mark, 109.
  - Totals—
    - Monthly, 20, 52, 84, 128, 160, 197, 200, 232, 264, 296, 336, 368, 408.
    - Weekly. *See* each issue.
    - Two years' record, 1, 9.
- Congress—
  - Bills, tolls and operation of Canal, 141.
  - Committees, visit, 34, 66, 82, 90, 94, 134.
  - Petitions of employes, 320.
- Construction and Engineering Department—
  - Chief Clerk, acting, 268.
  - Chief Engineer, acting, 186, 196, 322.
  - Third Division, office abolished, 186.
- Consuls, British, changes, 183.
- Convict labor, housing, 33.
- *Corozal* dredge, launching and voyage, 25, 89, 141, 165, 245, 257, 271, 341.
- Cost statements, Part 2, Nos. 11, 24, 37, 50; also, Page 414. No. 52.
- Court martial witnesses, 212.
- Cranemen, steamshovel, promotion, 420.
- Cranes for terminal docks, 54, 301, 381.
- Cruces trail, highway, 191.
- Culebra Cut—
  - Accident fatal, 399.
  - Air and water service, 91.
  - Bridge, railroad, 357.
  - Cross section and profile, 83, 153.
  - Drainage, 157, 229, 261, 357, 405, 413.
  - Drilling and blasting, 301, 318.
  - Excavation. *See* Excavation.
  - French dump, removal, 333.
  - Heated areas, report of geologist, 225, 373.
  - Incline for hauling out spoil, 50, 125.
  - Pumps, portable, 117.
  - Slides, 21, 125, 184, 197, 205, 333, 357, 373.
- Culebra Island, water supply, 25.

D

- Dairy farm, Ancon Hospital, 349.
- Dams—
  - Cost statements, Part 2, Nos. 11, 24, 37, 50.
  - Emergency, locks, 141, 181, 221.
  - Fill placed, monthly, 20, 52, 84, 128, 160, 189, 200, 205, 232, 253, 264, 296, 336, 368, 408.
  - Gatun—
    - Borrow pits, 81, 109, 189, 205, 237, 253, 269, 295, 317, 382, 409.
    - Fill 173, 189, 205, 253, 277, 297, 317, 333.
    - Switchback for spoil trains, 81.
  - Miraflores, hydraulic fill, 149, 173, 297.
  - Pedro Miguel—
    - Fill, 112, 181, 285, 297, 350.
    - Plan and cross section, 112.
  - Report, Chief Engineer's, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
  - Spillway. *See* Spillway.
- Dancing, a popular amusement, 335.
- Debts of employes, 159.
- Dennis, Mrs. L. R. relief fund, 13, 38.
- Depot Quartermaster, acting, 48.
- Diablo lighting system, 81.
- Diet for the tropics, 67.
- Directory, Canal officials, 8, 340.
- Disbursing Officer, acting, 15.
- Distillation Tax, 327.
- Distillery lease, Antonio Andrade, 165.
- Docks—
  - Atlantic terminal, 89, 133, 231, 285, 298, 338, 401.
  - Cargo handling, 181, 280.
  - Dry, plans, 111.
  - Dynamite at Mindi, 17, 87, 270, 309.
- Docks—
  - Pacific terminal—
    - Collapse, 413.
    - Cranes, 54, 301, 381.
    - Excavation, 317, 341, 405, 409.
    - Lumber, 21, 53, 117, 144, 189, 298, 373.
- Drainage—
  - Culebra Cut, 157, 229, 261, 357, 405, 413.
  - Mindi River, 133.
  - Sumps, lock, 208.
- Dredge—
  - *Corozal,*
    - Accident, 341.
    - Launching and voyage, 25, 89, 141, 165, 245 257, 271.
  - *Culebra*, seagoing suction, 149.
  - Excavation—
    - Atlantic entrance, 1, 47, 65, 117, 149.
    - Cost statements, Part 2, Nos. 11, 24, 37, 50.
    - Pacific entrance, 41, 51, 65, 73, 86, 165, 397, 413.
    - Totals. *See* Excavation.
    - *See* Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
  - Ladder *No. 6*, to be destroyed, 43.
  - Pipeline transfer across Isthmus, 381.
  - Spud for *No. 83*, 97.
  - Teeth for buckets, 119.
  - Repairs, 1, 47, 51, 65, 86, 117, 149, 165.
- Drilling, Culebra Cut, 301, 318.
- Drowning, J. D. Kemp, 319.
- Dry dock plans, 111.
- Dumps—
  - French, Culebra Cut, removal, 333.
  - Material disposed, 51.
  - Unloader records, monthly, 21, 51, 90, 129, 166, 195, 233, 263, 295, 326, 409.
- Dynamite—
  - Dock at Mindi, 17, 87, 270, 309.
  - Estimate for fiscal year, 290, 298.
  - Explosion, fatal, 214.
  - Remaining in cars, 196.

E

- Earthquake shock, 277.
- Eight hour law, 367.
- Eight years of Canal work, summary, 297.
- Elections, Panama, 354, 363.
- Electric—
  - Current for individuals and companies, 307.
  - Shock, first aid, 143.
  - Power plants—
    - Balboa, 81.
    - Gatun spillway, 5, 119, 297, 360-1, 413; Part 2, Nos. 11, 50.
  - Transformer equipment, locks, 265, 389.
  - Street railway, 305, 409.
- Electrical engineers, visit, 93, 143, 162, 182.
- Electrical Superintendent, acting, 315.
- Equipment—
  - Dismantling and remodeling, 196.
  - Inventory, 350.
  - Overhauling and repairs, 290.
  - Rates for use, 307.
  - Surplus, 322.
- Estates, administration, 209.
- Estimates—
  - Concrete, 277.
  - Dynamite, 290, 298.
  - Excavation, 21, 405.
  - Fiscal year 1914, 403.
- Examinations—
  - Civil Service. *See* Civil Service.
  - Commission in Volunteer Force, 86.
  - Local Inspectors. *See* Local Inspectors.
  - Rodman and levelman, 54, 59, 175, 280, 374.
- Examiner of Accounts, acting, 315, 338.
- Excavation—
  - Amount remaining, monthly, 20, 52, 84, 128, 160, 200, 232, 264, 296, 336, 368, 408.
  - Borrow pits, Gatun dam, 81, 109, 189, 205, 237, 253, 269, 295, 382, 409.
  - Contract, 309.
  - Cost, fiscal year, 25.
  - Cost statements, Part 2, Nos. 11, 24, 37, 50.
  - Culebra Cut—
    - Cross section and profile, 83, 153, 373.

- Excavation—
  - Culebra Cut—
    - Records—
      - Monthly, 9, 41, 373.
      - Daily, 25, 34, 221, 245, 269.
  - Dredges. *See* Dredges.
  - Eight years of Canal work, summary, 297.
  - Estimate increase, 21, 405.
  - Gatun lake anchorage basin, 149, 181, 248.
  - Hydraulic, Pacific Division, 26, 65, 81, 97, 301, 334.
  - Locks. *See* Locks.
  - Mindi, 1, 41, 65, 157, 245.
  - Panama railroad relocation, 12, 43, 51, 91, 129, 159, 199, 231, 328.
  - Pedro Miguel, history, 353.
  - San Pablo and Tabernilla, 51, 117, 149.
  - Steamshovel records—
    - Monthly, 12, 51, 91, 129, 159, 199, 231, 263, 295, 335, 383, 398.
    - Daily, 25, 34, 91, 221, 229, 237, 245, 261, 269 293, 295, 349, 389.
  - Totals—
    - Monthly, 17, 49, 81, 125, 157, 197, 229, 261, 293, 333, 365, 405.
    - Monthly since American occupation, 20, 52, 84, 128, 160, 200, 232, 264, 296, 336, 368, 408.
  - *See* Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
- Executive Orders—
  - Advertising on U. S. property, 35.
  - Cement specifications, 342.
  - Civil Procedure, amendment to Code, 59.
  - Distillation tax, 327.
  - Eight hour law, 367.
  - Employment of Alumni of Mexican School, 114.
  - Estate, administration, 209.
  - Firearms, permits to carry, 95.
  - Law of the Road, 239.
  - Medical practice, license required, 83, 154.
  - Petitions of employes to Congress, 320.
  - Postal savings bank, 25, 35.
  - Purchase of supplies from soldiers or sailors, 114.
  - Railway equipment, removing of packing from journal boxes, 43.
  - Sanitary rules and regulations, amendment, 83.
  - Special Commissioner, appointment 43.
  - Speed laws for vehicles, 239.
  - Supreme Court Justice, appointment, 54.
  - Trespassing, 295.
- Expenditures—
  - Accounts, 32, 147, 203.
  - Classified, monthly, 39, 69, 96, 147, 168, 201, 247, 282, 307, 353, 386, 411.
  - Construction. *See* Cost Statements.
- Expense, traveling, 363.
- Explosions, fatal, 198, 214.

F

- FAKES, historic, 115.
- Fender chains and machines, locks, 45, 126, 173.
- Fenders on lock walls, 53, 127.
- Filtration plants, 157, 169, 393.
- Fire apparatus, automobile, 65, 165, 309.
- Firearms, permits to carry, 95.
- Fires—
  - Empire plantation, 246.
  - Steamshovel damaged, 277.
- First-aid packets and booklets, 181, 288.
- Flamenco Island—
  - Graves transferred, 4.
  - Fortifications. *See* Fortifications.
- Fluviograph stations, change, 173.
- Folding machine, printing plant, 317.
- Fortifications—
  - Assistant Engineer in charge, 164.
  - Culebra Island water supply, 25.
  - Dock for material at Mindi, 17, 87, 270, 309.
  - Flamenco Island, 4, 36, 73.
  - Names of forts, 169.
  - Perico Island, trespassing, 414.
  - Secrecy regarding, 251.
  - Toro Point, 73, 87.
- Fortune Island laborers repatriated, 401.
- Fossils, specimens collected, 22, 97.
- Fourth of July celebration, 305, 311, 322, 330, 335, 338, 352, 354, 370.
- Freight—
  - Consignments to individuals and companies, 95.
- Freight—
  - Panama route, 44, 152, 213.
  - Rates, proposed increase, 213
- Fuel, liquid, rules for use, 115.

G

- GASOLINE, issue and use, 7, 115.
- Gates. Locks. *See* Locks. Spillway. *See* Spillway.
- Gatun Lake—
  - Anchorage basin, 149, 181, 248.
  - Buildings, removal and sale, 89, 205.
  - Control of area covered, 317.
  - Rise, 293.
  - Timber, 277, 282.
  - Villages to be abandoned, 68, 120.
- Geographic Board, conventional signs, 380.
- Geologist reports—
  - Coal deposits, 255.
  - Heated areas, Culebra Cut, 225.
- Golden Green, sanitation, 46.
- Grass cutting, 140.
- Gravel pits, 153, 285.
- Graving dock, plans, 111.

H

- HAMBURG-AMERICAN S. S. cruises, 168.
- Hammond, Mrs. E. D., benefit, 38, 94, 119.
- Health Officer, acting, 64, 251.
- Health work and lectures, 19, 86, 166, 223, 289, 295, 359.
- Heat records, 230, 281.
  - *See also* Weather reports.
- Highways—
  - Convict labor, housing, 33.
  - Cruces trail, 191.
  - Distances, 6.
  - Empire-Chorrera, 33.
  - Law of the road, 239.
  - Sabanas Road, resurfacing, 238.
- Holidays, 64, 106, 140, 212, 255, 315, 354, 411.
- Hose for cleaning floors, 164.
- Hospital—
  - Dairy farm, 349.
  - Laundry charges, 309.
  - Morgue, chapels, 213.
  - Trees and plants, 394.
- Hotel—
  - Balboa abandoned, 374.
  - Tivoli, improvements, 298, 317, 399.
  - Washington, 3, 69, 93, 246.
- Hydroelectric plant, Gatun, 5, 119, 297, 360-1, Part 2, No. 11, 50.

I

- ILLINOIS Manufacturers Assn., visit of members, 126.
- Immigration, Panama, 222, 301, 325, 367.
- Impounding of stray animals, 19.
- Inca Society, dinner, 298.
- Incorporation in the Canal Zone, 389.
- Infantry regiment, Camp Otis, 9, 46, 86, 93.
- Isthmian Telephone Company contract, 2.

J

- JOHNSON, Prof. Emory R., Special Commissioner, 43.

L

- LABOR—
  - Clearance and identification, 55.
  - Force and quarters, monthly report, 36, 67, 111, 127, 167, 199, 231, 281, 320, 359, 391, 407.
  - Force reduction, 48, 71, 159, 164.
  - Fortune Island, repatriated, 401.
  - Recruiting, 27.
  - Surplus, 57.
  - United Fruit Company, to Guatemala, 374.
  - *See* Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
- Labor Train—
  - Atlantic Division, 71, 96.
  - Pacific Division, 247, 362, 367.
- Lake—
  - Gatun. *See* Gatun Lake.
  - Miraflores, channel, 197.
- Land—
  - Agricultural possibilities, 13.
  - Survey, 18.
  - Terminal, leasing, 365.
- Launch—
  - "Cathandre" destroyed by fire, 335.
  - Inspection, 327.
- Laundry, Ancon Hospital, changes, 309.
- Lawn tennis tournaments, 167, 194, 288, 343.
- Law—
  - Eight-hour, 367.
  - Highway, 239.
  - Steamboat inspection, 86, 131, 152, 310.
  - *See also* Executive Orders.
  - *See also* Ordinances.
- Letters, misdirected. *See* each issue.
- Lighters for sale, 277, 317.
- Lighthouses—
  - Installation, map and plans, 41, 101-4.
  - Sun valves, test, 125.
  - *See* Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
- Lighting, villages, change, 81.
- Lights, unauthorized, in quarters, 371.
- Liquor licenses, 290, 338.
- Local Inspectors—
  - Examinations, pilots. *See* Pilots.
  - Fire and boat drill supervision, 325.
  - Member, acting, appointment, 403.
  - Steamship inspection, 86, 131, 152, 310.
- Locks—
  - Concrete. *See* Concrete.
  - Cost statements, Part 2, Nos. 11, 24, 37, 50.
  - Cover plates, machine recesses, 33, 201.
  - Cranes for machine erection, 133.
  - Dams, emergency, 373.
  - Electric transformer equipment, 265, 389.
  - Fenders—
    - Chain and operating machines, 45, 126, 173, 192, 208, 297.
    - Wall, 53, 127, 297.
  - Gate—
    - Installation, 33, 49, 161, 297, 301.
    - Paint, 365.
    - Reamers, electric, 189.
    - Sealing device, 76, 357.
    - Test, 49, 301.
    - Timber for sills, 405
    - Valves, 33, 65, 76, 92, 117, 145, 192, 297.
    - *See* Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
  - Gatun—
    - Air compressors, 245.
    - Backfill, 197, 237, 373.
    - Bridge, construction, 125, 269.
    - Cofferdam, 91, 181.
    - Concrete. *See* Concrete.
    - Dam, emergency, 141, 373.
    - Excavation, 181, 389.
      - Totals. *See* Excavation.
    - Gates and machinery, 49, 89, 109, 161, 173, 221, 269, 293, 301, 317, 333, 365, 397, 409.
    - Slides, 41.
    - Trestle for concrete trains, 237.
    - Towing tracks, 149, 197 224, 389.
    - Valves and machines, 76, 92.
    - Walls—
      - Approach, plans, 321.
      - Construction, 49, 97, 109, 117, 229, 321, 333, 392.
  - Machinery, operating—
    - Control system, 192.
    - Installation, 2, 33, 77, 145, 161, 192, 201, 301.
    - Model, 233, 405.
    - Storage room, 145.
    - See reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
  - Miraflores—
    - Air compressors, 127, 149.
    - Backfill, 117.
    - Bridge for towing tracks, 189.
    - Caissons for guide walls, 57, 109, 141, 213.
    - Concrete. *See* Concrete.
    - Excavation, 26, 33, 65, 73, 81, 97.
      - Totals. *See* Excavation.
    - Gates and machines, 221.
    - Spur tracks, 253.
    - Trestle for concrete trains, 205.
    - Walls, construction, 9, 33, 57, 109, 141, 205, 213, 269, 293, 294.
  - Model, 233, 405.
  - Motors, valve operation, 41, 65, 208, 253.
  - Pedro Miguel—
    - Air compressors, 245.

- Locks—
  - Pedro Miguel—
    - Backfill 57, 81.
    - Concrete. *See* Concrete.
    - Cranes, removal, 158, 189.
    - Dam, emergency, 141, 181, 221.
    - Drainage, 157, 229.
    - Excavation, 89, 141.
    - Totals. *See* Excavation.
    - Gate erection, 57, 81, 89, 109, 221, 269, 409
    - Spur tracks, 253.
    - Towing tracks, 189, 197, 224, 389.
    - Trestle, 165, 310.
    - Walls—
      - Construction, 9, 57, 89, 109, 113, 165 173, 290, 293, 397.
      - Guide, arches connecting, 113.
  - Pumping plants, 397.
  - Pumps and motors, 208.
  - Snubbing posts, 51.
  - Summary of work, 297.
  - Towing locomotives and tracks, 21, 33, 37, 65, 141, 149, 186, 189, 197, 224, 389.
  - Valves and machines, 33, 65, 76, 92, 117, 145, 192, 297.
  - *See* reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
- Locomotive—
  - Bearings, hot, 282.
  - Flues, replacing, 222.
  - Injectors, 307.
  - Staybolts, broken, 155, 164.
  - Tools and equipment, 55, 115, 164, 212.
  - Towing, locks. *See* Locks.
- Lodge notices. *See each issue.*
- Lubricants—
  - Containers, 7, 268.
  - Inspector, 7.
  - Record, 23.
  - Standard, list, 7, 14, 186, 386.
- Lumber—
  - Cocobolo, transshipment, 67.
  - Orders placed, 87.

M

- MAIL service, ocean, proposals, 381.
- Market regulations, 11.
- Marine Corps, surcharge, 15, 23.
- Material, second hand, transfer, 251, 255.
- McClintic-Marshall men, employment, 64.
- Mechanical Committee, meeting, 155.
- Mechanical Division—
  - Boiler inspection, 131.
  - Empire shops transferred, 331.
  - Scale inspection, 213.
  - Superintendent, acting., 71.
- Mechanics for temporary work, 219.
- Medals, Canal—
  - Distribution, 13.
  - List, 249, 256, 263, 279, 287, 304, 319, 351.
  - Unclaimed, 191.
- Medical practice, license required, 83, 154.
- Memorial Day services, 315, 320.
- Mileage books, half rate, 92, 147, 179, 282.
- Miraflores Lake, channel, 197.
- Model, lock machinery, 233, 405.
- Money orders, monthly report, 3, 36, 70, 97, 143, 17 185, 214, 248, 288, 337, 358.
- Money order business with Mexico, 280.
- Morgues, hospital chapel, 213.
- Motor cars, levers for brakes, 373, 393.
- Motor vehicles, licensing and regulation, 319.
- Motors, lock, 41, 65, 208, 253.
- Murder of a soldier, 383.

N

- NATIONAL Bankers Association, visit, 12.
- Navigation aids. Notices to mariners, 140, 142, 170, 196, 276, 303, 319, 349, 366, 414.
  - *See also* Lighthouses.

O

- OBITUARY—
  - Alton, Stephen H., 31.
  - Benion, H. G., 122.
  - Bolton, Herman T., 67.
  - Boyd, Mrs. O. S., 46.
  - Brenner, Joseph, 343.
  - Cecil, Mrs. H. E., 122.
- Obituary—
  - Clayton, W. E., 46.
  - Caldwell, Geo. Alfred, 5.
  - Coe, Henry P., 36.
  - Cole, S. C., 223.
  - Colip, R. H., 210.
  - DesLondes, Oscar L., 130.
  - Duvall, Fredericka, 409.
  - Ferguson, Howard, 214.
  - Fondren, Carl, 337.
  - Golden, John P., 295.
  - Grier, Robert, 36.
  - Grigsby, Frank C., 170.
  - Hagen, John, 258.
  - Higley, Charles, 303.
  - Horham, James Luther, 170.
  - Jefferics, Jinkney, 130.
  - Kemp, J. D., 319.
  - Kennison, Nelson, 281.
  - Kornfield, Karl, 250.
  - Locks, Charles F., 400
  - Longtin, F. R., 223.
  - McEvers, Edward, 122.
  - Morrise, Harry, 379.
  - Newcomb, Geo. E., 144.
  - Painter, Joseph Henry, 409.
  - Payne, Roy E., 35.
  - Powers, Isaac, 343.
  - Proctor, Alman R., 379.
  - Reynolds, Thomas Coarts, 343.
  - Riley, James J., 27.
  - Riley, Thomas, 379.
  - Roe, Mrs. Martin, 311.
  - Sadler, Joseph V., 243.
  - Schwartz, Henry, 351.
  - Strock, James Ransom, 409.
  - Thayer, John P., 59.
  - Treadwell, Edward Frederick, 135.
  - Turrell, Joseph, 105.
  - Vanderschmidt, Henry, 243.
  - West, C. B., 59.
- Offices, permanent, 277, 359, 397, 409.
- Officials, Canal directory, 8, 340.
- Oil—
  - Fuel—
    - Deliveries and pipe-line changes, 43.
    - Inspector, 7.
    - Sale and use, rules, 115.
  - Illuminating, standard, 7, 386.
  - Lubricating. *See* Lubricants.
- Ordinances—
  - Impounding of stray animals, 19.
  - Market regulations, 11.
  - Motor vehicles, licensing and regulation, 319.
  - Quarantine inspection at night, 11.
  - Taxes and licenses, amendment, 11, 319.
- Organization statements, 395, 403.
- Oxygen and acetylene gas tanks, 395.

P

- PACIFIC Division, Engineer, Actg., 32, 170, 420.
- Pacific Mail steamship service, 243.
- Panama—
  - Census, 12.
  - Elections, 354, 363.
  - Immigration, 222, 301, 325, 367.
  - Sewers, 5, 58, 93, 206.
  - Street improvements, 58, 93.
  - Tramway, electric, 305, 409.
  - Water supply, 5, 33, 58, 157, 253.
  - Wyse, Lieut. L. N. B., bust unveiled, 407.
- Panama Railroad—
  - Baggage contract, 13.
  - Car Dept., Gen'l Foreman, acting, 291.
  - Chief Engineer, acting, 331.
  - Coal, selling prices, 282.
  - Commissary. *See* Commissary.
  - Docks. *See* Docks.
  - Freight tonnage and rates, 44, 152, 213.
  - Gravel pits, 153, 285.
  - Master of Transportation, acting, 371.
  - Mechanical Dept., Gen'l. Foreman, acting, 354, 371
  - Mileage books, 92, 147, 179, 282.
  - Parlor car service, 198.
  - Passenger business, 44.
  - Passes, card, 155.
  - Receiving and Forwarding Agent, acting, 315.
- Panama Railroad—
  - Relocation—
    - Bridge, bascule, at Monte Lirio, 190, 278.
    - Embankments, riprapping, 373.
    - Engineer in Charge, acting, 331.
    - Excavation records, 12, 43, 51, 91, 129, 159, 199, 231, 328.
    - Gold Hill section completed, 253, 328.
    - Gorgona-Gatun section opened, 181.
    - Ties, hardwood, 141.
    - Water station at Frijoles, 295.
    - *See* Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
  - Removal of old line, 261.
  - Roadmaster, appointment, 411.
  - Sale of unclaimed shipments, 131, 146, 155.
  - Second-class transportation, 106.
  - Shuttle train, Colon-Gatun, 230.
  - Sightseeing train, 190, 207, 219, 317, 331.
  - Special trains on election day, 358.
  - Station at Panama, 42, 110, 329.
  - Steamships. *See* Steamships.
  - Superintendent, General, acting, 380.
  - Telephone. *See* Telephone.
  - Time Tables, 79, 195, 206, 211, 317, 338, 352.
  - Trip tickets, 140, 196, 212, 255, 411.
  - Tugs. *See* Tugs.
  - Work requests, 106.
- Parcels post, 349.
- Pay, rate table, nourly employes, 354.
- Pay car schedule, 371, 403.
- Pay certificates, 77, 106.
- Penitentiary—
  - Farm, survey, 12.
  - Relocation, 309.
- Petitions of employes to Congress, 320.
- Piling—
  - Concrete, cost statement, Part 2, Nos. 11, 24.
  - Orders placed, 87.
- Pilot examinations, 14, 27, 43, 59, 78, 92, 112, 129, 145, 175, 194, 210, 226, 243, 255, 271, 303, 337, 350, 383, 401, 444.
- Plague, quarantine precautions, 54, 71.
- Pneumatic hammer, 400.
- Police, pistol tournaments, 46, 367.
- Police and Prisons, Chief, appointment, 380.
- Port Captains, appointment, 39.
- Postage stamps in books, 93.
- Postal clerks, convention, 3.
- Postal sales, monthly, 3, 36, 70, 97, 143, 175, 185, 214, 248, 288, 337, 358, 382.
- Postal savings bank—
  - Authorization and rules, 25, 35, 105, 167, 182.
  - Reports, monthly, 238, 288, 337, 361, 382.
- Power plant—
  - Balboa, 81.
  - Gatun, 5, 119, 297, 360-1, 413, Part 2, Nos. 11, 50.
- Printing plant, folding machine, 317.
- Public Health Association, invitation to, 383.
- Pumping plant—
  - Locks, 397.
  - Reservoir, 33, 149, 349, 393.
- Pumps and motors, locks, 208.
- Purchasing Agent, acting, 48.

Q

- QUARANTINE—
  - Cholera precaution, 54.
  - Inspection at night, 11.
  - Officer, acting 64, 251.
  - Plague cases, 67, 71, 381.
- Quartermaster's Department—
  - Chief, acting, 32, 299.
  - Depot Quartermaster, acting 48.
  - Purchasing Agent, acting, 48.
- Quarters—
  - Bachelor, at Corozal, 401.
  - Congestion, Pacific end, 406.
  - Family, application list, 38, 63, 96, 127, 170, 203, 235, 283, 323, 354, 383, 410.
  - Permanent, report of Committee, 359.
  - Report, monthly, 36, 67, 111, 127, 167, 199, 231, 281, 320, 359, 391, 407.
  - Tenth Infantry at Las Cascadas, 86, 93.
  - *See* Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.

R

- Rainfall—
  - Accumulated for the year, 143.
  - Dry season, 299.
  - Monthly, three years, 23, 55, 88, 129, 159, 186, 191, 227, 290, 299, 339, 371, 402.
  - Records broken, 117, 301.
  - Stations, change, 173.
  - Weekly. *See each issue.*
  - *See also* Weather reports.
- Range towers. *See* Lighthouses.
- Ratings and rates of pay, 23, 32, 155, 170, 196, 219, 282.
- Reamers for riveting lock gates, 189.
- Red Cross—
  - Election of officers, 130.
  - Endowment fund, 86.
  - Financial statements, monthly, 22, 70, 96, 130, 168, 215, 267, 327, 361, 383.
  - Reception to Miss Mabel T. Boardman, 150, 162, 168.
  - Seals, 105.
- Report, Commission, annual, 54.
- Reprimand and suspension of employes, 155.
- Reservoirs—
  - Agua Clara, filtration plant, 157, 169.
  - Cocoli pumping station, 33.
  - Comacho system, 149.
  - Mt. Hope filtration plant, 393.
  - Mt. Zion system, 261.
  - Rio Grande main, 33, 157, 253.
  - Water shortage and restrictions, 140, 149, 290, 303, 366.
  - *See also* Water.
- Revenues, monthly, 3, 36, 70, 143, 185, 214, 248, 288, 337, 358, 382.
- Rifle clubs and matches, 21, 112, 170, 266, 337, 409.
- Riveters, power, for shops, 221.
- Roads. *See* Highways.
- Rock—
  - Cost statements, Part 2, Nos, 11, 24, 37, 50.
  - Concrete cost, 17, 25.
  - Crushers—
    - Porto Bello plant closed, 289.
    - Statements, weekly, *See each issue.*
  - Culebra Cut, for dams, 253.
- Rolling stock, conversion to standard gage, 114.
- Royal Mail Steam Packet Co., rate, 119.

S

- Sabanas road, resurfacing, 238.
- Salvation Army Institute, 3, 94, 154.
- Sand—
  - Cost statements, 17, Part 2, Nos. 11, 24, 37, 50.
  - Nombre de Dios service discontinued, 89.
  - Report, monthly, Pacific Division, 26, 51, 96, 129, 161, 185, 193, 233, 280, 303, 326, 369, 399.
  - *See* also Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
- Sanitary drinking cup, 390.
- Sanitation, Department of—
  - Assistant Chief, acting, 140.
  - Chief Sanitary officer, acting, 123, 299.
  - Health Officer, acting, 64, 251.
  - Quarantine Officer, acting, 64, 251.
  - Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
- Sanitary rules and regulations, amendment, 83.
- Sanitary work requests, 32, 123, 140, 420.
- Scales, inspection, 213.
- Schools—
  - Attendance, 54, 167.
  - Brake schedule, 35.
  - Close, 337,
  - High, 250, 325, 343, 351, 357.
  - Holidays, 130, 234.
  - Medical examination, 369.
  - Opening, 19.
  - Summary of year's work, 400.
  - Teachers, assignment and qualifications, 35, 226.
- Scrap, French removal and sale, 25, 131, 133, 147, 269, 392.
- Settlements, permanent, 277, 359.
- Sewers, Panama and Colon, 5, 58, 93, 206.
- Shipments, reduced rate requests, 268.
- Shops—
  - Empire, transferred, 331, 357.
  - Employment on Isthmus, 55.
  - Expense percentage, 7, 123, 155, 203, 299, 403.
  - Riveters, power, 221.
  - Steel casting plant, 196, 248.
- Sick leave and disability certificates, 331.
- Sightseeing train, 190, 207, 219, 317, 331.
- Six year men, Society of the Chagres, 11, 31, 54, 142, 174, 194.
- Slides—
  - Culebra Cut, 21, 125, 184, 197, 205, 333, 357, 373.
  - Excavation increase, 21, 405.
  - Gatun Locks, 41.
  - Steamshovel wrecked, 334.
- Snubbing posts, locks, 51.
- Society of the Chagres, 11, 31, 54, 142, 174, 194.
- Special Commissioner, appointment, 43.
- Speed laws, highway, 239.
- Spillways—
  - Concrete. *See* Concrete.
  - Cost statements. Part 2, Nos.11, 24, 37, 50.
  - Gates and machines, 68-9, 325, 381
  - Gatun—
    - Baffle piers, 254.
    - Closing, 221, 293, 397.
    - Cofferdam, 133, 173.
    - Gates and caissons, assembling, 325.
    - Ogee construction, 133, 173, 221.
    - Operating tunnel, 97.
    - Power plant, 5, 119, 297, 360-1, 413, Part 2, Nos. 11, 50.
    - Sluice gates, 338, 341, 349.
    - Trestle, construction, 365.
    - Work program, 57.
  - *See* Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
- St. Louis Business Men's League, visit, 183.
- Stationery and office supplies, sale, 170.
- Steamship—
  - Arrivals and departures. *See each issue.*
  - Cruises for tourists, 168.
  - Fire and boat drill, 325.
  - Inspection, 86, 131, 152, 310.
  - Munson Line, aground, 118.
  - Pacific Mail—
    - Service, 243.
    - Sunk by collapsing wharf, 413.
  - Panama Railroad—
    - Accidents, 12.
    - Chartered, 9.
    - Repairs to the *Allianca*, 19.
    - Tourist rate, 82.
  - Royal Mail Steam Packet Co., rate, 119.
  - Sailings. *See each issue.*
  - United Fruit Company—
    - Coastwise service 13, 289.
    - Cruises for tourists, 168.
    - European service, 320, 337.
    - Increase in service, 168.
    - Stateroom reservations, 255.
  - Water supply and rates, 39, 302.
- Steamshovel—
  - Excavation. *See* Excavation.
  - Cranemen, promotion, 420.
  - Damaged by fire, 277.
  - Dipper trips, 85.
  - Efficiency statement, 410.
  - Rail clamps, 73, 149.
  - Records. *See* Excavation.
  - Wrecked by slide, 334.
- Steel casting plant, 196, 248.
- Storehouse for obsolete and surplus supplies, 112.
- Storms, local, 4, 302.
- Subsistence Department—
  - Chief Clerk, acting, 64.
  - Chief Officer, acting, 331.
  - See Reports, Chief Engineer, monthly, 28, 60, 98, 136, 176, 215, 239, 271, 311, 343, 375, 415.
- Suicides, 78, 175, 303, 315.
- Sun valves, test in range towers, 125.
- Supplies—
  - Inventory, 350.
  - Sale, 245.
  - Storehouse, 112.
  - Weekly receipt. *See each issue.*
- Supreme Court Justice, appointments, 46, 54.
- Surcharge, material and labor, 15, 23, 71, 251.
- Survey—
  - Canal Zone land, 18.
  - Pacific approaches to Canal, 255.
  - Penitentiary farm, 18.
- Swamp reclamation, 97, 149.

T

- Taboga Sanitarium—
  - Admission, 243.
  - Launch service, 403.
- Taxes and licenses, amendments, 11, 319.
- Telepnone—
  - Calls, 212, 354, 380.
  - Directory changes, 363, 383, 412.
  - Isthmian Company, contract, 2.
  - Superintendent, appointment, 299.
- Tenth Infantry, 9, 46, 86, 93.
- Terminals. *See* Docks.
- Termination ot service forms, 140.
- Third Division, Chief Engineer's office—
  - Assistant Engineer, Actg, 32, 140.
  - Abolished, 186.
- Tidal data for Pacific entrance, 89.
- Tide tables. *See each issue.*
- Ties, hardwood, railroad relocation, 141.
- Timber—
  - Gatun Lake, 277, 282.
  - Lock gate sills, 405.
- Time lost, illness or injury, 354.
- Time vouchers, silver employes, 255.
- Tivoli Club, annual meeting, 13.
- Tivoli hotel, improvements, 298, 317, 399.
- Tolls, Bill introduced in Congress, 141.
- Tourists in transit, 222, 301, 325, 367.
- Towing locomotives and tracks, locks, 21, 33, 37, 65, 141, 149, 186, 189, 197, 224, 389.
- Track shifter operations, monthly, 358.
- Trails—
  - Contract for clearing, 135, 164, 172.
  - Cruces, highway, 191.
- Tramway construction, Panama, 305, 409.
- Transformer equipment, locks, 265.
- Transportation—
  - Labor train, 71.
  - Mileage, half rate, 92, 147, 179, 282.
  - Passes, card, 155.
  - Second-class, 106.
  - Trip tickets, official, 140, 196, 212, 255.
- Traveling engineers, responsibility, 164.
- Trees, hospital gardens, 394.
- Trespassing, 295.
- Tug—
  - *Phoenix*, transfer to New York, 381.
  - *Reliance*, voyage with tow, 189, 309, 325, 341.
  - Schedules, 70, 286.
  - Repairs to *Cocoli*, 50.
- Tungsten lamp installation, 299.

U

- Union Oil Company, oil delivery, 43.
- United Fruit Company. *See* Steamships.
- Unloaders, Central Division, records, 21, 51, 90, 129 166, 195, 233, 263, 295, 326, 374, 409.

V

- Vacation pay and leave, rules, 386.
- Valves, lock, 33, 65, 76, 92, 117, 145, 192, 297.
- Vehicles, speed laws, 239.
- Villages—
  - Gatun lake, 68, 120.
  - Permanent, 277, 359, 397, 409

W

- Washington hotel, 3, 69, 93, 246.
- Water—
  - Agreement with Panama, 5.
  - Church service, 123.
  - Colon plans, 393.
  - Culebra Cut supply, 91.
  - Culebra Island supply, 25.
  - Examination, rules and regulations, 354.
  - Filtration plants, 157, 169, 393.
  - Frijoles station, 295.
  - Panama and Colon, agreement, 5.
  - Panama supply, 5, 33, 58, 157, 253.
  - Pumping stations, 33, 149, 349, 393.
  - Rates for steamships, 39.
  - Reservoirs. *See* Reservoirs.
  - Rio Grande main, 33, 157, 253.
  - Shortage and restrictions, 140, 290, 303, 366.
  - Tank at Miraflores, 247.
- Weather—
  - Heat records, 230, 281.

Weather—
  Reports—
    Monthly, 15, 55, 88, 129, 163 219, 283, 299, 330, 371, 402.
    Yearly, 169.
  Stations, change, 173.
  Storms, local, 4, 302.
  See also Rainfall.
Wharves—
  See Docks.
Wireless station—
  Information from, 268.
  Proposed, 285.
Women's Clubs—
  Delegates to General Federation, 351.
  Federation meeting, annual, 162, 183.
  Plans for year, 22.
  See each issue.
Work, private, by employes, 77.
Work requests—
  Blanket orders, 307.
  Panama railroad, 106.
  Sanitary, 32, 123, 141.
Wyse, Lieut. L. N. B., bust unveiled, 407.

Y

YELLOW fever victims, 234, 374.
Y. M. C. A. *See* Clubhouses.

ILLUSTRATIONS, DRAWINGS, MAPS, DIAGRAMS, Etc.

Culebra Cut—
  Excavation, 83, 153.
  Slides, 184.
Dam, Pedro Miguel, 112.
Dredge, *Corozal*, 257.
Electric power plant, Gatun Spillway, 360-1.
Electric transformer room, locks, 265-6.
Excavation, Culebra Cut, 83, 153.
Fenders, lock—
  Chains, 45, 208.
  Wall, 53.
Gates—
  Lock machines, 161.
  Spillway machines, 68-9.
  Valve, 76.
Hydroelectric plant, 360-1.
Lighthouses and range towers, 104.
Lighting of Canal, map, 102-3.
Locks—
  Approach walls, Gatun, 321.
  Concrete arches, 113.
  Cover plates, 201.
  Electric transformer equipment, 265.
  Fenders. *See* Fenders.
  Gates. *See* Gates.
  Towing locomotive, 37.
  Towing tracks, 224.
  Valve, cylindrical, 93-4.
Locomotive wheel tire, 114.
Map, lighting of Canal, 102-3.
Panama railroad station, 329.
Pneumatic hammer, 400.
Red Cross seal, 105.
Sanitary drinking cup, 390.
Slides, Culebra Cut, 184.
Spillway gate machines, 68-9.
Steamshovel—
  Dipper trip, 85.
  Rail clamp, 74.
Towing locomotive, 37.
Towing tracks, 224.
Wharf, lumber, Balboa, 144.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, AUGUST 30, 1911. No. 1.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
· Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Two Years at Gatun Locks.

Concrete laying at Gatun Locks was begun on August 24, 1909, and on August 24, 1911, there had been placed 1.548.790 cubic yards, leaving to be placed 451,210 cubic yards. An average of 2,183 cubic yards was laid per working day during the period August 24, 1909 to August 24, 1910, and an average of 2,911 cubic yards per working day during the period August 24, 1910 to August 24, 1911.

The work has been done by two plants, one consisting of eight 2-yard cube mixers, whose product is placed by four duplex cableways stretching across the lock site, and the other, of two 2-yard cube mixers, whose product is conveyed to place by construction railway. The cableway plant was not in full operation until January, 1910, although it began work on August 24, and the second plant began mixing concrete on December 27, 1909. The advance of the work from month to month is shown in the following statement:

MONTHS.	1909.	1910.	1911.
January	....	54,136	72,919
February	....	55,696	72,103
March	....	60,998	86,884
April	....	63,227	67,361
May	....	74,273	67,844
June	....	89,401	55,305
July	....	84,001	71,046
August	1,298	85,686	*52,805
September	12,294	76,720	....
October	29,378	86,949	....
November	30,270	75,152	....
December	42,832	80,212	....
Total	116,072	886,451	546,267

*August 1 to 24.

The amount of concrete placed each month will decrease steadily from this time forth, because the floor in all three locks is completed, and the second plant, which was largely engaged on the floor work, cannot be used to full capacity much longer. The walls in the upper and middle locks are practically completed, and the placing of concrete in large quantities is now confined to the lower locks, the walls of which are rapidly nearing completion. Three of the duplex cableways are working over the lower locks, the fourth having been withdrawn from concrete laying to handle iron and back fill at the upper locks. The distribution of concrete yet to be placed will be about, as follows:

	Cu. Yds.
Upper lock and forebay, including flare walls	16,926
Middle lock	32,897
Lower lock, including side flare walls and exclusive of center approach wall	326,035
Upper guide wall, center	32,766
Lower guide wall, center	42,586
Total	451,210

Armoring the West Breakwater, Colon.

The first barge load of rock for armoring the west breakwater, extending from Toro Point into Limon Bay, was brought from Porto Bello by the tug *Empire* on Wednesday, August 23. and has been dumped on the north side of the trestle fill, near its shore end. At the breakwater, the barges are towed into a small harbor, where the rock is unloaded by locomotive cranes upon Lidgerwood flat cars, which are run out upon the trestle, where the rock is ploughed off at the points desired. This method will give way, presently, to that of unloading by derrick barges, which will lift the rock from the scows, and place it upon the breakwater in one operation. Work on these derrick barges has been delayed by the tardiness of the contractors in the United States in the delivery of material.

The pieces of rock designed for armoring the breakwater will be broken, as far as possible, to size, and when the quarry is well opened up they will weigh as high as 15 tons. The rock is handled with "dogs," holes being bored into each piece to give the points a better purchase. In unloading onto the barges, the pieces of rock are deposited in order, so as to facilitate their unloading. The output as yet is small, only two barge loads having been received since the work began. This is mainly due, however, to the cleaning up of that part of the quarry where the selected rock is to be obtained.

The breakwater trestle now extends about 6,400 feet into the bay from the shore line.

Hydraulic Fill of Colon Completed.

The hydraulic fill of the city of Colon was completed on August 4, and dredge *No. 86*, which performed the greater part of the work, was withdrawn on that date, and placed in the drydock at Mount Hope for a general overhauling. The total amount of fill was 828,582 cubic yards. As the work advanced, it was found desirable to make the fill considerably higher in places than the established grade, in order to utilize the surplus in raising various low spots, which the discharge pipe of the dredge could not reach to advantage. It was possible to supply this extra fill, and, at the same time, to come within the limit of the amount to be expended, by reason of a lower yardage cost than was first estimated. All of the material was taken from Folks River, just east of the Mount Hope road, and this part of the bayou has been deepened to an average depth of about 30 feet.

The Colon fill was begun on November 5, 1910, by the dredge *Sandpiper*, which was exchanged on the 13th of that month for dredge *No. 86*. which was operated uninterruptedly until the completion of the work three months ago. The best monthly record made was that of July, 1911, when 124.949 cubic yards were placed. A report of the fill, by months, follows:

MONTH.	*Quantity. Cu. Yds.*
November 1 to 12, 1910, by *Sandpiper*	22,317
November 14 to 30, 1910, by dredge *No. 86*	43,970
December, 1910	97,731
January, 1911	112,841
February, 1911	70,826
March, 1911	84,948
April, 1911	92,361
May, 1911	76,501
June, 1911	97,149
July, 1911	124,949
August 1 to 4, 1911	4,989
Total	828,582

At the Atlantic Entrance.

The Canal has been extended to its full width at the Atlantic entrance as far inland as the old French canal, a distance from deep water of about five and a half miles, and there is a depth of at least 20 feet for the whole of this distance. The dipper dredge *Chagres* has rejoined the dredging fleet after extensive repairs in the Mount Hope drydock. A new boom and new bull wheel were put on, and all the machinery was given a thorough overhauling. This dredge is digging in rock, and excavating to the full depth of 41 feet. Ladder dredge *No. 1* has been taken to the drydock, where the hull will be repaired, the machinery overhauled, and the end of the ladder will be renewed. The tug *DeLesseps* has been sent to drydock, where its boiler will be replaced by one already used on the work, but in condition to stand the wear until the completion of the Canal. Within a few hundred yards of the dredges, near the French canal, two steam shovels are working in the pit at Mindi, excavating in the dry a quantity of rock and earth that still remains before the channel through the Mindi hills will be completed. One of the shovels is taking out the last of the soft earth at the north end of the pit, and when this work is completed, the greatest difficulty will be past. The other shovel is taking out rock at the north end. All the rock has been blasted. The spoil is hauled to Gatun, where it is needed in the back fill at the locks. Only two shovels are kept at work, because sufficient cars cannot be furnished to a greater number, the smallness of the pit, the heavy grade up which the trains must run to gain the natural level of the land, and the sloppy condition of the pit after each rain, making it unprofitable to expand the transportation service. The work here will be finished in about six months.

Between the place where the dredges are working, and the pit in which the shovels are

NOTES OF PROGRESS.

(Continued.)

digging, there are about 400,000 cubic yards of material to be excavated, mostly rock. No work is being done on this section at present, because removing material from it might cause a slide in the barrier that has been thrown up between the French canal and the steam shovel pit

Change in Telephone Service.

A contract has been entered into between the Panama Railroad Company, and the Isthmian Telephone Company, a local corporation organized for the purpose of conducting a general telephone business, including the operation of exchanges at Colon and Panama, by which the railroad company transfers its commercial toll line business in respect to calls originating at Colon or Panama, to the telephone company. For some time past, the railroad company has been furnishing unlimited toll line service to business houses in the cities of Colon and Panama at the fixed rate of $7.50 per month. This service will be discontinued on September 1, the date the new contract takes effect, and the telephone company will at once establish its toll line service, using the railroad company's through circuits, out of Panama, and Colon.

The message rate for the present will be 10 cents, United States currency, based upon a 3-minute conversation. All conversations beyond the 3-minute limit will be charged for at the rate of 10 cents for each additional 3-minute period. Under the contract, however, this rate may be changed upon mutual agreement. An all night service will be maintained.

The telephone company has an exchange in operation in Colon, equipped with a switchboard of Monarch make, and has obtained a concession for the establishment of another local exchange in the city of Panama, for which it has ordered a switchboard of the same type as at Colon. The contract does not include the Canal Zone in its scope, and the present arrangement of charging a subscriber, who wishes a telephone for commercial business, $7.50 per month for the service, will continue to obtain at all intermediate points. The exchanges of the railroad company will be connected into the exchanges of the telephone company by suitable trunking facilities, the cost of which will be borne by the telephone company. The contract also provides that official business shall take precedence over the business of the telephone company in the transmission of calls over the circuits set aside for the telephone company's use, should occasion arise.

A telephone pay station has been installed in the Hotel Tivoli. A new booth has been constructed and placed within the enclosure of the news stand in the hotel foyer. Guests of the hotel are charged for calls made from the rooms to points outside of the hotel. The following tariff rate has been adopted:

	Gold.
Panama, or Ancon	10c
Corozal exchange	20c
Empire exchange	20c
Gorgona exchange	25c
Gatun exchange	45c
Colon, or Cristobal	50c
Toro Point	50c

All calls are charged to the occupant of the room from which the call comes. Calls pertaining to official business of the Isthmian Canal Commission, or the Panama railroad, will be free. The system went into effect August 14.

A method of procedure has been approved for the installation of the operating machinery for the locks and spillways. The work of installation will be done under the Assistant Chief Engineer, and certain preliminary work by the construction divisions concerned. The method was devised by a committee, consisting of Edward Schildhauer of the Assistant Chief Engineer's force, John M. G. Watt of the Pacific Division, and Geo. M. Wells of the Atlantic Division.

CONCRETE WORK IN THE LOCKS.

About 63 per cent of the concrete for all the locks is in place, the amount at the close of the work on August 26, being 2,642,129 cubic yards, out of a total of approximately 4,199,400. A total of 34,289½ cubic yards of concrete was laid in the locks during the week ending August 26.

GATUN LOCKS.

Over 77 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on August 26, being 1,556,508 cubic yards. out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending August 26, and of the total, follows; and a similar statement for the work in the Spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours daily, and the auxiliary plant 9 hours.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
August 21	1,300	25.04	6	408	7.40	2	126	1,834
August 22	1,538	24.46	6	482	7.40	2	184	2,204
August 23	1,898	31.26	6	512	8.40	2	242	2,652
August 24	1,900	31.04	8	278	6.40	2	90	2,268
August 25	1,796	28.46	8	456	7.40	2	4	2,256
August 26	1,780	27.47	7	528	8.40	2	34	2,342
*Portable mixers				544½				544½
Total	10,212	168.53	6.83	3,208½	47.00	2	680	14,100½
Previously reported								1,542,407½
Grand total								1,556,508

*The 544½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days: August 21st, 87; August 22nd, 75½; August 23d, 100; August 24th, 99½; August 25th, 101½; August 26th, 81.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 85 per cent completed, 711,798 cubic yards, out of a total of 837,400, having been placed at the close of work on August 26. The record for each of the six 8-hour working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
August 21	672	19.00	3	229	12.25	2		901
August 22	580	17.00	3	195	10.83	2		775
August 23	600	18.00	3	170	10.50	2		770
August 24	552	16.00	3	72	5.00	1		624
August 25	498	14.00	2	146	7.00	2		644
August 26	438	14.00	3	275	16.67	3		713
Total	3,340	98,00	2.83	1,087	62.25	2		4,427
Previously reported							4,441	707,371
Grand total							4,441	711,798

MIRAFLORES LOCKS.

Over 27 per cent of the concrete for the system of two twin locks at Miraflores was in place on August 26, the total amount on that date being 373,823 cubic yards, out of a total of approximate'y 1,362,000. The record for each of the six 8-hour working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Aug. 21	1,608	39.00	6	906	13.75	2	264	19.00	3		2,778
Aug. 22	1,554	34.07	6	820	13.00	2	224	18.50	3		2,598
Aug. 23	1,352	30.03	6	932	14.40	2	68	6.00	2		2,352
Aug. 24	1,348	29.27	5	1,052	15.33	2	94	6.50	1		2,494
Aug. 25	1,770	35.67	6	1,218	17.50	2	88	6.00	1		3,076
Aug. 26	1,410	31.50	6	926	13.75	2	128	8.00	1		2,464
Total	9,042	199.54	5.83	5,854	77.73	2	866	64.00	1.83		15,762
Previously reported										3,693	358,061
Grand total										3,693	373,823

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

There will be a meeting of the executive board of the Canal Zone Federation of Women's Clubs at Cristobal on Friday, September 8. According to the provisions of the revised by-laws, adopted at the annual meeting in April, the executive board is composed of the officers of the federation, the librarian, and the presidents of the federated clubs. Arrangements for the annual meeting to be held in January, 1912, will be made, and such special committees as are needful for the work will be appointed.

Church Notes.

The ceremony of blessing the parish house in connection with St. Ferdinand's Roman Catholic Church, Empire, was held on Sunday, August 20. Following the celebration of solemn high mass in the church at 9 a. m., a procession, formed of three priests, eight brothers of the Vincentian Order, and three Sisters of Charity of the same order, the children of the church, and members of the church societies, proceeded to the parish house, where the ceremony took place. The building, as remodeled, contains an assembly hall, three bedrooms, a priest's study, a refectory, kitchen, pantries, and servants' quarters. The Commission has contributed the furnishings throughout the living apartments, and the members of the congregation have placed such furniture as is necessary in the assembly hall. Social entertainments in connection with the opening of the house, were a meeting of the negro members of the congregation on Sunday afternoon, August 20, and a "smoker" held by the members of St. Ferdinand's Club on Wednesday evening, August 23. The two priests in charge have taken up residence in the parish house. All meetings of the church societies will be held in the assembly hall.

The members of the club of men and women connected with the Roman Catholic church in Las Cascadas, held a reception at the home of Mrs. W. W. Bowers on Saturday evening, August 19. The reception was a farewell to Mrs. Bowers, who is leaving Las Cascadas after a residence of four years.

Protestant Episcopal Missions.

The annual report of the Panama Mission of the Protestant Episcopal Church for the year ending June 30, shows that there are four priests in charge of the Canal Zone missions for Americans, with headquarters at Culebra, Ancon, Colon, and Empire. Two West Indian clergymen are in charge of missions at Gatun and Culebra. During the year, three priests resigned, and one was appointed to the hospital chapel at Ancon. Beside the priests, there are ten catechists. These men are West Indian negroes, and they are appointed by the General Missionary Board upon passing an examination. By their aid, with one deacon, the clergy are enabled to maintain regular weekly services in 15 missions, and to provide occasional services at other stations.

Owing to the progress of the Canal work, and the demolition of the villages of Tabernilla and San Pablo, the missions at those places have gone out of existence. Many of the former residents of the villages have removed to Pedro Miguel, and the organization of a mission there is projected as soon as funds for the erection of a church building can be raised.

The present missions for white congregations are located at Empire, Culebra, and Ancon. At Colon, Christ Church ministers to West Indians and Americans. Provision is made for regular services at Gatun and at Gorgona. Missions for West Indian negroes are located at Mount Hope, New Gatun, Bas Obispo, Gorgona, Las Cascadas, Empire, Culebra, Paraiso, and Panama. A rectory has been built at Gatun by the Church Missions building fund. There is an unorganized mission at Pleya del Flor, which is visited regularly by one of the priests. There are eight chapters of the Brotherhood of St. Andrew, with a total membership of 150. In connection with the churches in Colon, Empire, Culebra, and Ancon, there are altar guilds composed of American women.

New Salvation Army Institute.

The restaurant in the new Salvation Army institute at Cristobal was opened for business on Monday, August 28. The new institute. which was rebuilt by the Commission to take the place of the one destroyed in the fire of March 23, is situated on the Mount Hope road, about 500 feet south of the original site. It is two stories in height, 68 feet by 35½ feet, approximately of the same length, but considerably wider than the old building, thus materially increasing the amount of floor space.

The restaurant occupies the front room on the first floor, as formerly, but, on account of the increased width of the building, it has a much larger seating capacity. The counter, where the lunches are prepared. is on the right as one enters. As heretofore the custom, only light refreshments, consisting mainly of coffee, cocoa, sandwiches, and eggs in various styles, will be served. A small kitchen opens from the restaurant on the right, and another doorway leads into a reading room. From this room is an entrance to the dormitory, a large apartment occupying the entire rear of the first floor, capable of accommodating upward of 100 lodgers. It will be equipped with berths ranged along the sides of the room, and a night's lodging will be furnished, as formerly for 25 cents, or, in the case of the destitute, free. There are two outside entrances downstairs, one a front entrance for the use of the restaurant patrons, and the other, a side entrance for the lodgers.

There are seven rooms upstairs for the use of the commanding officer and his family, and assistants, one of which will be devoted to office purposes. All of the front rooms on the second floor open on a veranda. The Salvation Army on the Isthmus, of which Adjutant George Catlin is the divisional head, now comprises six corps—two at Colon, one each at Panama, Empire, Gorgona, and Gatun. He also has under his jurisdiction the corps at Bocas del Toro, and one at Port Limon, visiting both places four times a year.

Postal Business and Canal Zone Revenues.

During the month of July, the Canal Zone money order business amounted to $407,397.91 in orders issued, of which there were 16,669. The average value of orders issued was $24.44. Of the $407,397.91 in orders issued, $305,895.68 was payable in the United States, $100,969.73 in the Canal Zone, $372.50 in Martinique, and $160 in Costa Rica. The fees amounted to $1,811.04, and the amount paid and repaid was $120,906.35. Postal sales amounted to $6,010.79, and newspaper postage 20 cents.

Canal Zone revenues during the month of July were, as follows:

Distillation licenses	$475 21
Bicycle and chauffeur licenses	231.00
Motor vehicle licenses	188.00
Taxes, licenses, etc	8,489.04
Total	$9,383.25

PERSONAL.

Major Chester Harding, Major J. P Jervey, and Major T. C. Dickson, accompanied by their wives. sailed on the *Ancon* for the States on August 25 on annual leave of absence.

Convention of Postal Clerks.

The first annual meeting of the Canal Zone postal clerks will be held at Taboga Island on Labor Day, September 4. All post-offices will be closed the entire day, and official transportation will be issued to postmasters and clerks from their respective stations to Panama, and return, in order that they may attend the convention.

Tau Beta Pi.

All members of Tau Beta Pi, on the Isthmus, are requested to send their names to T. C. Morris, Gatun, C. Z.

Transfer of Odd Fellows Lodge.

The transfer of Canal Zone Lodge, No. 3, Independent Order of Odd Fellows from Culebra to Empire, will take place this week, and the first meeting in the new quarters will be held on Saturday evening. September 2. All members are requested to attend.

Moving the Washington Hotel.

The Washington Hotel at Colon was closed on August 19 for the purpose of moving it to another site, out of the way of the improvements in connection with the new hotel and grounds. It will be transferred to a vacant lot back of Christ church, near the Garfield House, and will have the same relative position as at present, with one end abutting on Bolivar street. The work of lifting the structure off its foundations and placing it on rollers is now in progress. Originally, the present building consisted of two stories, and was built about the year 1870. A third story was added about six years ago. It will be reopened for business upon its removal to the new location.

Rules for the guidance of employes in charge of oil-burning equipment have been printed in English, and will be printed in Spanish.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Gatun, C Z., on Sunday, September 3, 1911, at 5 p. m. The program follows:

1. March—*Ideal*..........Reeves
2 Selection—*The Spring Maid*..........Reinhardt
3. Duet for cornet and baritone—*Miserere*....Verdi
Messrs. Sanmartin and Follman.
4. Overture—*Fest*..........Luetner
5. Waltz—*Casino Tanze*..........Gung'l
6. (*a*) Medley march—*Kiss Me Honey, Kiss Me*..........Snyder
(*b*) Two step—*Casey Jones*..........Newton
7. Reverie—*Silent Thought*..........Morrison
8. Medley selection—*Remick's Hits*..........Lampe
9. March—*The Arbitrator*..........Bagley

Chas. E. Jennings, *Musical Director*.

The next concert will be given at the Hotel Tivoli, on September 10, at 7.30 p. m.

FLAMENCO ISLAND GRAVES.

Removal of Remains of Sailors and Others Buried There.

Thirty-one graves of persons buried, from time to time, during the past 50 years on Flamenco, or Dead Man's Island, in Panama Bay, have recently been transferred to Ancon cemetery to make way for the fortification work. There were two cemetery plots, one on the northeast side of the high rock mass, which forms the greater part of the island, and another and larger plot on the west side, facing Naos Island. It is not known how many persons have been interred on the island, as it is probable, in view of the condition some of the tombstones and markers were in, that many others have long since disappeared, leaving unmarked graves. The greater part of the burials were of persons who died on board vessels en route to Panama, or while the vessels were at anchor in Panama Bay. Officers and sailors from the United States Navy, who fell victims to yellow fever, contributed a large percentage of the total number, and, in the case of the U. S. S. *Jamestown*, and that of the U. S. S. *Lancaster*, the loss was especially heavy.

Wolfred Nelson, in his book, "Five years in Panama," makes reference to the case of the U. S. S. *Jamestown*, but appears to have confounded it with that of the U. S. S. *Lancaster*, for he says"* * * * On the face of the island toward the city of Panama, one sees a handsome monument which was erected in memory of the officers and men of the United States ship *Jamestown*, who fell victims to yellow fever while anchored there in the year 1858. Eighty of her officers and crew were buried there. * * * * *" The monument in question was erected to those who died on board the U. S. S. *Lancaster* in 1861. There is a monument to the memory of a paymaster on the U. S. S. *Jamestown*, but the date given is 1867.

There were burials on the island up to 1911, the last being that of a man who was drowned at the Flamenco anchorage in December, 1910. In most cases, very little was found to indicate the presence of a grave; a few bones, generally the teeth, and, in one instance, a number of brass buttons were exhumed. These were placed in separate boxes, and reinterred in a place set aside for the purpose in Ancon cemetery, marked with their proper headstones and monuments. There were a number of Chinese buried on the island, but only two graves were removed, the transfer being made by members of that race. No body was permitted to be exhumed that had not been buried at least 18 months. The grave of a plague victim, who died in quarantine, a short time ago, was, therefore, left untouched.

The monuments, tombstones, or markers found intact, and their inscriptions are, as follows:

In small cemetery upon the hill.—Tall monument, inscribed on four sides, as follows: First side—"Lieut. J. Whipple Harris, born in New Hampshire, died August 24, 1861, aged 24 years." Second—"James McBride, Ireland, died August 12, 1861, aged 28; Stephen Mullins, Ireland, died August 18, 1861, aged 21; Francis McCabe, New York, died August 18, 1861, aged 27; Alfonso Worden, New York, died August 27, 1861, aged 28." Third—"The officers and crew attached to the U. S. S. *Lancaster*, flag officer, J. B. Montgomery, have just arrived in these seas, and erect this monument in memory of those who died and are buried here." Fourth—"John McCarthy, Ireland, died January 30, 1860, aged 25; Andrew Jackson, New York, died August 14, 1860, aged 27; Patrick Barry, Ireland, died August 10, 1861, aged 32; Henry C. Cummings, Pennsylvania, died August 12, 1861, aged 22."

Tombstone, inscribed "In memory of Sergeant William A. Corwin, U. S. Navy, died March 11, 1886, on board U. S. S. *Adams*, erected by his messmates."

Tombstone, inscribed "Michael Grady, aged 37; John Collier, aged 33."

Monument, inscribed "John Adams Bates, paymaster, died of yellow fever off Panama, on U. S. S. *Jamestown*, March 4, 1867, aged 29 years."

In large cemetery on west side of island.—Tombstone inscribed "Frida Volguardsen, born at Mazatlan, October 27, 1878, died on board *City of Panama*, March 19, 1879."

Tombstone, inscribed "George Hale, apothecary, U. S. S. *Tuscard*, aged 29, died March 18, 1873."

Tombstone inscribed "J. A. Mullin, died November 15, 1861, aged 26."

Tombstone, inscribed "Died in Panama, November 20, 1861, Alonzo James K., only child of James S. and Hannah Hermann, aged 3 months, 19 days," with epitaph reading "Who plucked this bud? The Master, the Gardener willeth but is silent."

Tombstone inscribed "In memory of Alex. H. Charles, master machinist, Naos Island, a native of Burast Island, Fifeshire, Scotland, died September 6, 1885, aged 29 years."

Tombstone, inscribed "LeRoy B Westfall, first officer steamship *J. L. Stephens*, died April 13, 1856, aged 43."

Tombstone, inscribed "S. L. Halladay, a native of Sydney, died December 14, 1867, aged 26."

Tombstone, inscribed "Commander Leonard Paulding, U. S. N., commander U. S. S. *Wateree*, died April 29, 1867."

Tombstone, inscribed "Mrs, Mary Kehoe, late Mrs. Mary Rosseter of Dublin, Ireland, born 1796, died April 29, 1860, erected by her only surviving children, George R. and John H. Rosseter."

Monument on the grave of the U. S. S. *Lancaster* officers, inscribed "William J. Whipple Harris, lieutenant, U. S. N., born at Portsmouth, July 5, 1837, died on board U. S. S. flagship *Lancaster*, in Panama Bay, August 24, 1861."

Tombstone, inscribed "I. L. Foster, died July 24, 1862, aged 5 years 6 months and 4 days. Willie P. Foster, died July 26, 1862, aged 3 years 10 months and 22 days; children of William and Mary J. Foster."

Tombstone, inscribed "John G. Hill, late chief engineer Pacific Steam Navigation Company's steamer *Quito*, died of yellow fever in Panama Bay, May 14, 1903. R. I. P."

Tombstone, inscribed Charles Henry Middleton, born June 12, 1806, died May 20, 1872."

Wooden cross, with the words, in Spanish, "Fallécio, Gregorio Carrasco, el 20 de Junio, 1910."

Tombstone, inscribed "Frederick Longworth Hodkinson, second engineer, P. S. N. S. S *Quito*, son of John Alfred, and Anne Hodkinson, England, June 8, 1886—March 1, 1909." He died of yellow fever en route to Panama from Guayaquil.

Monument, inscribed "Charles T. Cornell, aged 26, born at Kerry, Ireland, died May 15 1895. U. S. S. *Denver*."

Monument, inscribed "H. R. Barclay, chief engineer P. S. N. S. S. *South Carolina*, died August 30, 1883, aged 44."

Monument, inscribed "Bryan Ackland, aged 24, died at sea of yellow fever, 21st of December, 1909." This man was on his way up from Guayaquil, and died before the vessel he was on reached Panama.

Tombstone, inscribed in Spanish, "Fallécio, Eugenio Achaddea, 31 de Diciembre, 1910." This man was drowned off a hulk at the Flamenco Island anchorage.

Monument, inscribed "Andrew Blasykonski, purser, U. S. Navy, died May 4, 1902, aged 25."

Headstone, with only the initials "L. R. W." There was another headstone, which was broken. The only words remaining on it were "Died June 31, aged 32." There was still another broken stone, with the words "In memory of my beloved husband, Tobias Y. Burke of Maryland, born June 4, 1836; died November 6, 1888. D. B. S. A."

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 68 per cent completed, 152,764 cubic yards, out of a total of 225,000, having been placed at the close of work on August 26. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
August 21	200	15.00	2
August 22	172	12.00	2
August 23	200	16.00	2
August 24	184	15.00	2
August 25	188	14.00	2
August 26	120	12.00	2
Total	1,064	84.00	2
Previously reported	151,700		
Grand total	152,764		

Porto Bello Crusher.

A statement of the rock crushed at Porto Bello quarry during the week ending August 26, follows:

DATE.	Hours worked.	Cubic Yards.
August 21	2.32	1,155
August 22	2.05	754
August 23	2.55	947
August 24	3.25	1,190
August 25	3.35	1,897
August 26	5.12	1,981
	19.44	7,924

Resolutions of Respect and Sympathy.

The Pedro Miguel Masonic Club has adopted resolutions of respect in connection with the death of John C. Blair, a copy of which has been forwarded to Renovo Lodge, No. 495, Renovo, Pa., with which he was affiliated.

At the meeting of the Isthmian Canal Rebekah Lodge, No. 1, Gorgona, Independent Order of Odd Fellows, resolutions of sympathy were passed on the death of Mrs. Otis, the mother of Mr. Harry Otis of Gorgona.

At Culebra, on August 18, during a local rain storm, the wind reached a velocity of 38 miles an hour, blowing from the northeast. This is the second highest velocity recorded at this station, the highest being 39 miles an hour on July 20, 1910.

GATUN POWER PLANT.

Bids to be Asked for Hydroelectric Equipment for Permanent Use.

Bids will be advertised for in the near future for the following materials and equipment for the hydroelectric generating plant at the Spillway in Gatun Dam: Three water turbines, 2250 kilowatts each; 3 governors; 3 headgates; 3 penstocks; 3 compressed air regulators; 3 electric generators; 3 exciters; 2 motor-driven exciter sets; one lubricating system; one 20-ton traveling crane. The switchboard, cable control, and electric fixtures will be advertised for later.

The equipment is for the generating station that will furnish current for power to operate the gates, valves, and other machinery of the locks, the regulating works of the spillways of Gatun and Miraflores dams, and will furnish light for the same, as well as light and power along the Canal. Two proposals will be requested, one for a plant to be installed in the center of the Dam at the Spillway, and the other below the Dam at the Spillway, the advantage of the latter location being greater head. Water for both plants will be taken from Gatun Lake at the Spillway, where regulating gates will keep the maximum elevation as near 87 feet above sea level as possible, and where, at the end of the four months' dry season, the water may fall as low as 79 feet above sea level. From a concrete forebay in the Spillway dam, water will be carried in penstocks, equipped with headgates and compressed air regulators, or surge tanks, to the turbines.

For proposal No. 1, the average difference between the water levels in the lake and in the tailrace is estimated at 75 feet, and the turbines are rated on this basis, and are of the vertical type. For proposal No. 2, the turbines are to be rated upon the basis of an average difference of 83 feet in elevations. The topography in the vicinity of the lower end of the Spillway dam is suitable for either a vertical or horizontal type of turbine.

Turbines—The turbines will be of the unsubmerged, vertical shaft type, with not more than two runners per turbine, and with runners encased and in tandem; speed 300, 250, or 214.3 rotations per minute, whichever is best adapted to the design of turbine. Each will deliver 2250 kilowatts at the shaft when the average difference in water levels is 75 feet for proposal No. 1, and 83 feet for proposal No. 2. In operation, the turbine will be subject to instantaneous fluctuations of load equal to 50 per cent of the full rating. The runners are to be of cast iron, or steel plate, or a combination of both, designed to give the blades maximum rigidity and strength, arranged to permit easy removal from the case, to withstand all shock occasioned by water hammer, and an increase in speed of 100 per cent above normal. The outer casing will be of cast iron, or steel plate, and the inner casing of cast iron; and every facility for the inspection, repair, and removal of the runners will be provided. The shaft will be of forged nickel steel, preferably of hollow cross section, but alternative bids for a forged carbon steel shaft will be considered. The speed regulating gates will be of the balanced wicket type. A vertical thrust bearing of the hanging, ball, or roller type, is specified for the main bearing, but bids will also be considered for bearings of other types. Each turbine will be provided with quick acting, relay type governors, actuated either electrically or hydraulically, and of sufficient capacity for operating the gates smoothly, and in such time as will give the minimum variation in speed of the turbine. Each governor will be equipped with an auxiliary device for smoothly closing the gate in event of the failure of the governor to operate.

Headgates—One headgate will be required to close the opening to each penstock. It will be constructed entirely of iron and steel, will run in cast iron or steel guides, and be raised and lowered by means of a vertical stem, to which motion will be transmitted by a vertical, nonrising worm, driven by a 220-volt, 3-phase, 25-cycle induction motor. Each gate will be equipped with an auxiliary valve for the purpose of passing water slowly into the penstock after periods of shut down or disuse of the turbine, and it must be of size to fill the penstock in approximately five minutes. After the penstock is filled, the headgate will open automatically. In front of the gates will be a trash rack of bar iron to protect the gates, penstock, and turbine from damage by débris carried in the water.

Penstocks—The penstocks will be of the combination metal plate and concrete type, the metal being sufficiently strong to take the tension caused by the hydrostatic and impact pressures of the water, and the concrete, the external pressure of the back fill. The concrete will be placed by the Commission and forms no part of the contract. The inside diameter of the penstocks will not be less than 10 feet 6 inches, the plates of wrought iron or soft steel not less than 3-8 of an inch thick, and joined into a continuous tube from gates to turbines, either by riveting or by lockbar joints.

Compressed air regulators—The compressed air regulators, or surge tanks, are to be of the differential type, and will be located in the basement of the power house under the generator room. The complete equipment will consist of one regulator attached to each penstock, a common header connected to a compressed air tank, two air compressors, and the necessary auxiliaries. The function of the regulator, in addition to acting as a buffer for shocks, due to rejected loads, will be to assist the governor in adjusting the turbine speed. It will be constructed of steel plates, air tight, and will be riveted to the penstock through a tapering nozzle of proper proportions to give the best results in speed regulation.

Generators—The generators will be of the 3-phase alternator type, capacity 2500 k. v. a. (2000 k. w.) at 80 per cent power factor; poles, 10, 12, or 14; voltage (delta) 2200; current per phase, 656 amperes; frequency, 25 cycles per second; speed, 300, 250, or 214.3 rotations per minute. They will be of the vertical, water turbine type, with separately excited, revolving field; armatures, star connected, and the neutral load to be brought to the same terminal block as the phase loads. The characteristics of the generators shall be such that they may be operated in parallel, either with one another, or with the present installation of three 1500-k. v. a., 2200-volt, 1500-r. p. m., 25-cycle, star connected, steam turbine-driven alternators, situated at Miraflores, 40 miles distant, by transmission from Gatun Spillway. Owing to the starting and stopping of the many induction motors required in the operation of the several locks, the generators will be subjected to instantaneous fluctuations of an extreme nature, and must be designed to meet the conditions of an instantaneous variation of load equal to 50 per cent of the full load rating. An exciter generator of the direct current, shunt wound type, 50 kilowatts, 125 volts, 400 amperes, 300, 250, or 214.3 rotations per minute, vertical type, will be mounted directly upon the shaft of each generator.

Two motor-driven exciter sets of 100-k. w. capacity, a gravity type lubricating system with centrifugal pumps, and one 20-ton, 3-motor traveling crane, to be erected in the power house, form part of the contract.

Sewer and Water Connections in Colon and Panama.

President Arosemena of Panama has approved the agreement recently entered into with regard to the installation of water and sewer pipes in the cities of Colon and Panama, and has issued the following decree under date of July 21, 1911:

Article 1. The provisions contained in the regulations governing the installation of water and sewer connections in the cities of Panama and Colon are interpreted in the following manner:

"When involving original construction in which the Commission constructs or lays water mains or sewer mains along the streets in which permanent buildings exist, the Commission will construct at the same time lateral extensions from these water or sewer mains to the edge of the sidewalk of the street, for the purpose of providing facilities to the owners of those buildings in order that they may make therein the necessary installations and connections; this work of lateral extensions shall be collected as a part of the original work of the water and sewer mains, and paid by the Republic of Panama. When connections are made from the edge of the sidewalk to the buildings in question, their owners shall pay the cost of such work.

"If the original construction of the water and sewer mains is made by the Commission in any of those cities along streets in which there are no buildings at the time of bringing such work to conclusion, then those lateral extensions from the water and sewer mains to the edge of the sidewalk shall not be made by the Commission *unless* the Government of the Republic requests it officially, and its cost shall be paid in the form agreed upon between the Government of the Republic and the authorities of the Commission.

"In cases in which installation of plumbing must be made, and it is necessary to connect with the water or sewer mains in the cities of Panama and Colon, and where those laterals have not been laid, such installations shall be made, as follows: From the water or sewer main to the edge of the sidewalk by the Division of Public Works of the Department of Civil Administration of the Canal Zone; and from said edge up to and in the building by its owners through duly licensed plumbers, and the cost of the entire installation from the water or sewer main up to and in the building shall be paid by the owner of the same; all those installations in both cities shall be made in accordance with the provisions and regulations upon the subject which have been heretofore or may hereafter be promulgated."

Ancon Quarry.

A statement of the rock crushed at Ancon quarry during the week ending August 26, follows:

DATE.	Hours worked.	Cubic Yards.
August 21	4.30	1,875
August 22	7.50	2,102
August 23	8.20	3,338
August 24	6.55	3,012
August 25	5.05	1,808
August 26	6.40	2,407
Total	38.00	**14,542**

Obituary.

George Alfred Caldwell, sanitary inspector at Gatun, died at Colon Hospital on August 26. He was 46 years of age, single, and was born in Kentucky. He was appointed to service on the Isthmus as a draftsman in the Division of Building Construction on July 29, 1904, and was transferred to the Department of Sanitation on January 1, 1907.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The moving picture schedule for the week, September 4 to 9 is, as follows: September 4, Gorgona; September 5, Gatun; September 6, Cristobal; September 7, Culebra; September 8, Corozal; September 9, Empire.

CULEBRA.

The game of volleyball between the Married Men and the Bachelors on Friday evening resulted two to one in favor of the Bachelors.

A volleyball tournament has been organized with five teams—Quartermaster, Chief Engineer, Married Men, Independent, and All Star.

Messrs. Dougherty and Case have been chosen as captains of the Culebra bowling teams to_represent Culebra in the Isthmian league.

EMPIRE.

The following high scores were bowled on the alleys during the past week: Tenpins—Giavelli, 208; Pinney, 212; Pearson, 214; Gustavson, 213. Duckpins—Pinney, 100, 124; Grund, 109; Scull, 100; McLeod, 103, 104, 105; Payne, 102; Pulsifer, 101; Danielson, 114; Davis, 107.

In the handicap tenpin tournament just closed, the following medals were won: Highest average. C. Anderson, 186.1; second high average, J. Spinks, 185.9; highest percentage of games won, L. Giavelli, 31 out of 34; second high average, F. L. Gorham, 23 out of 34; highest flat score, L. Giavelli, 243; highest handicap score, R. Kosier, 249 (handicap 20).

On Saturday evening, September 2, the Isthmian tenpin tournament will open, with Gatun playing at Empire.

In the boys' handicap duckpin tournament just closed, the following were winners: High score, Donald Benninger, 113; high average, Maurice Witt, average 88.2; most games, Wallace Catte, 11 out of 17.

The subject for discussion by the literary and debating society for September 1 will be "Personal economy as a factor in industrial conditions."

GORGONA.

The Hearons Sisters' Concert Company appeared before an audience of over 300 on Tuesday night, August 22, and will fill a return engagement on Saturday, September 9, with an entire change of program.

It has been decided to close the membership contest on Saturday night, September 23, when a "smoker" and entertainment will be given in honor of the winning team, the Gorgona indoor baseball team, champions of the Isthmian league, and the new members.

The monthly song service on Sunday night, August 27 was attended by about 150 people. The Rev. A. A. Nellis of Empire delivered an address, and Mrs. Jas. H. Murray, contralto, rendered two solos—"Absence" and "The Rosary"—in addition to the usual singing by the audience. The choir consisted of ten young ladies of Gorgona.

The following members have been appointed a house committee to promote the general comfort and satisfaction of patrons, and make suggestions as to changes or improvement of the accommodations and service: C. Patterson, L. W. Hennen, Manning Meeks, W. J Earle, H. D. Burnham, J. C. Deavours, and W. H. Keenan.

The dramatic society is rehearsing a two-act comedy sketch, which they expect to present in the near future. Arrangements have been made for the purchase of the necessary properties.

The tenpin bowling match between Camp Elliott and Gorgona on the local alleys on Saturday evening, August 28, resulted, as follows:

CAMP ELLIOTT.				GORGONA.			
May	154	138	119	M. Van	195	157	187
Wright	142	174	158	Humphrey	149	154	188
Schwartz	139	141	172	Haldeman	203	134	144
Simpson	103	142	154	Haggerty	149	156	168
Martins	167	165	159	Roper	200	144	159
Total	705	760	762		896	745	846

GATUN.

The preliminary chess and checker tournament resulted, as follows:

Checkers	Won.	Lost.	Drawn.
Gartrell	15	0	3
Lincoln	11	3	1
Chatfield	8	4	2
Barte	7	7	2
Clarke, F. L.	5	9	2
Clarke, J. B.	3	7	7
Chess—			
Hall	11	3	0
Grier	9½	2½	1
McQueen	4	2	0
Chatfield	6	6	0
Horle	2	2	0

In the present tournament each player will have four games of chess with each other player, and nine games of checkers. Ten chess players have entered the tournament.

At the last meeting of the wrestling class the members decided to hold their meetings twice each week. During the absence of Fred Huber, J. W. Wilson will act as instructor.

The Cristobal tenpin bowling team won two out of three games from Gatun on Saturday night.

CRISTOBAL.

At the opening meeting of the literary and debating club on August 23, a program was enjoyed by an audience of over 100. Refreshments were served, the ladies furnishing home made cake.

The subject for debate on September 6 is "Resolved, that immigration should be further restricted."

An order for new library books will be sent to the States. Any one knowing of good new books is requested to leave the names at the office.

The States entertainment given by the Hearons Sisters on Thursday night was attended by an audience of over 300. A return engagement, in the form of a sacred concert, will be given on Sunday night, September 3, at 9 p. m. This entertainment will be free to all.

The following are the leaders in the local tenpin handicap tournament:

	Won.	Lost.	P. C.
Weaver	15	3	.833
Peterson	5	1	.833
Louch	19	4	.826
Beard	17	4	.809
Buser	9	5	.643

Next Saturday night the opening games in the Isthmian tenpin league will be rolled on the Cristobal alleys between Culebra and Cristobal.

The following high scores were rolled during the week: Tenpins—Louch, 216, 216, 200; Rigney, 208; Wheeler, 203; Babbitt, 210; Burgoon, J., 205; Atkins, 200; Collins, 205, 202; Claherty, 212. Duckpins—Poore, 102; Louch, 106; Hess, 100, 106, 103.

Distances on Canal Zone Roads.

The distances along the Canal Zone Highway from Panama to Gorgona are, as follows:

FROM	TO	MILES.
R.R. station, Panama	Junction of road to Sabanas and Corozal road	0.79
R.R. station, Panama	Corozal R.R. station	4.03
R.R. station, Panama	Junction with road leading to Miraflores R.R. station	7.23
R.R. station, Panama	Pedro Miguel R.R. station	8.94
R.R. station, Panama	Church at Paraiso	10.20
R.R. station, Panama	East end of Empire suspension bridge	13.89
R.R. station, Panama	Empire R.R. station	14.56
R.R. station, Panama	Las Cascadas road crossing near corral	17.32
R.R. station, Panama	Junction with Marines' road to Bas Obispo station	19.00
R.R. station, Panama	Gorgona R.R. station	21.92
East end of Empire suspension bridge	End of macadam road leading to Las Cascadas plantation	2.88
R.R. station, Empire	End of the finished portion of road leading toward Chorrera	0.51
R.R. Station, Empire	End of graded portion of road leading toward Chorrera	1.70
R.R. station, Empire	R.R. station Culebra	1.20
Junction of the main highway and the Marines' road to Bas Obispo station	R.R. station, Bas Obispo	0.30
Junction of Sabanas and Corozal roads	Police station, Sabanas	2.37
Junction of Sabanas and Corozal roads	Zone line on Sabanas road	3.12

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, and Colon, during the week ending August 26:

Santona, August 21, from Baltimore, with 140 packages filter plant material, 52 pieces structural steel, 38 bundles steel rails, 1,580 pieces steel ties, 34 bundles lock material, 8 pieces lock material, 6 cases lock material, for Atlantic Division; 15 bundles lock material for Pacific Division; 9 barrels furnace castings, 126 pieces white oak lumber, 370 pieces couplers, for Mechanical Division; 1,200 kegs bolts, 5,000 bundles tie plates, 472 barrels crushed sulphate, 70 barrels lump alum, 1,500 cases dynamite, for stock.

Prinz Joachim, August 21, from New York, with 23 pieces castings for Atlantic Division; 14 cases paper for stock.

Montoso, August 22, from New York, with 89,400 bags cement for Atlantic and Pacific Divisions.

Abangarez, August 24, from New Orleans, with 35 pieces piling for Atlantic Division; 16 pieces steam shovel chains for Central Division; 10 pieces castings for Pacific Division; 425 pieces white oak lumber for Mechanical Division; 30 crates library paste, 921 bales hay, 23 bales duck, 125 pieces yellow pine lumber, 314 pieces yellow pine lumber, 914 bundles ceiling lumber, 1,693 bundles flooring lumber, for stock.

Zacapa, August 24, from New York, with 21 cases tape fuse and 16 barrels glassware for stock.

Advance, August 25, from New York, with 10 barrels paint, 6 cases car seals, 100 kegs spikes, 250 pieces rail joints, 29 bundles sheet iron, 9 cases insulated wire, 20 pieces lumber, 12 barrels graphite, 97 pieces pig lead, for stock; 10 pieces steam shovel chains for Central Division; 7 cases dredge sleeves for Atlantic Division; 170 cases glassware, 35 cases drugs and sundries, for Sanitary Department; and a miscellaneous cargo, the whole consisting of 720 packages, weighing 86 tons.

Prinz Eitel Friedrich, August 26, from New York, with 236 cases blasting caps for stock.

Married.

BATES-DEVOL—At Culebra, C. Z., on August 24, the Rev. Henry Collins officiating, Lucile Scott, daughter of Lieutenant-Colonel and Mrs. C. A. Devol, to Albert G. Bates.

ALLYN-McEWEN—At Cristobal, C. Z., on August 24, Laura D. McEwen of Ottawa, Kansas, to John C. Allyn of Springfield, Missouri, the Rev. J. L. Wise officiating. Canal Zone residence, Gatun.

Rainfall from August 1 to 26, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	1.94	12	6.18
Balboa	2.49	12	7.99
*Miraflores	2.30	20	6.36
Pedro Miguel	1.15	9	4.85
Rio Grande	2.13	2	7.69
Central Section—			
Culebra	2.47	21	7.88
*Camacho	1.64	21	7.61
Empire	1.96	21	5.63
Gamboa	.85	25	5.96
*Juan Mina	1.59	21	8.36
Alhajuela	1.29	21	9.59
*El Vigia	1.49	19	12.07
*Gorgona	1.05	2	7.35
San Pablo	1 70	25	6.20
Tabernilla	2.13	15	7.08
Bohio	1.05	25	4.94
*Monte Lirio	2.11	15	8.68
Atlantic Section—			
Gatun	2.19	20	6.71
*Brazos Brook	4.25	14	11.34
Cristobal	4.27	14	10.95
Porto Bello	4.27	13	†20.54

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., August 25.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, August 26, 1911. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Aug. 20	129.0	94.6	48.2	15.0	14.7
Mon., Aug. 21	141.9	103.5	57.5	18.8	15.3
Tues., Aug. 22	130.6	96.8	57.0	20.5	16.6
Wed., Aug. 23	127.8	94.5	48.2	17.1	16.6
Thurs., Aug. 24	127.7	94.0	46.8	16.7	16.4
Fri., Aug. 25	128.0	94.1	47.2	16.3	16.0
Sat., Aug. 26	127.9	94.0	47.5	16.3	15.9
Height of low water	125.0	92.0	44.0		

The following vessels arrived at, or departed from the port of Balboa during the week ending August 26:

Arrivals—August 20, *City of Panama*, from San Francisco; August 21, *Guatemala*, from Callao; August 22, *Mackinaw*, from San Francisco; *Manavi*, from Buenaventura; *Peru*, from Guayaquil; August 26, *Oberon*, from Port Harford.

Departures—August 22, *Quito*, to Guayaquil; August 23, *Palena*, to Valparaiso; August 24, *Stanley Dollar*, to San Francisco; August 25, *Peru*, to San Francisco; August 26, *City of Panama*, to San Francisco; *Manavi*, to Buenaventura.

LOST—In Colon, or on train No. 73, a ladies' gold locket and chain with initials "E. M." Reward, if returned to W. D. McHenry, Gatun.

OFFICIAL CIRCULARS.

Illuminating Oils and Lubricants.

CULEBRA, C. Z., August 15, 1911.

CIRCULAR NO. 314-G. (Superseding CIRCULAR NO. 314-B.):

The following list of illuminating oils, and lubricating oils and greases, will be considered as standard for the Isthmian Canal Commission and Panama Railroad Company, and will be used only for the purposes indicated, excepting only as noted in the last paragraph of this order. All requisitions on the Quartermaster's Department shall specify the oil or lubricant desired, either by the I. C. C. number given below, or by name, or by both, and no name other than that given below for each particular oil or lubricant shall be used in designating the same on requisitions, etc. No oils or lubricants will be requisitioned for unless the same are included in the following list, until after application for authority to procure same, showing the necessity therefor, has been first submitted to, and approved, by me.

The metal drums in which most of the lubricating oils are furnished have to be returned to the oil contractor in good condition. Care should, therefore, be exercised in their handling to prevent both damage and loss of oil, and in no case should they be used as a continuous container for the same or any other oils, but, when empty, should be returned promptly to the Quartermaster's Department.

The prices given below indicate the actual cost to the Commission and Panama Railroad Company of all oils and lubricants, delivered at Cristobal, under the present annual contract, (cost of drums not included) and are not intended to supersede the prices given in the price book of the Quartermaster's Department, and should not be used in the material accounts.

I. C. C. No. 1. *Valve oil*—For the internal lubrication of steam valves and cylinders on all classes of equipment. Cost, per gallon, in drums, $0.195.

I. C. C. No. 2. *Air compressor cylinder oil*—For the internal lubrication of air cylinders of air compressors, and for pneumatic hammers and drills. Cost, per gallon, in drums, $0.15.

I. C. C. No. 3. *Marine engine oil*—For marine engines, but not in crank cases, where it would be agitated and mixed with water, for, being a compounded oil, it would emulsify if so used; also for the block bearings of suction dredges. Cost, per gallon, in drums, $0.275.

I. C. C. No. 4. *Stationary engine oil*—For stationary engines, electric dynamos, and motors, wood and metal working machinery, and for the general lubrication of machinery; also, for dies of bolt cutters, turret lathes, etc., except where the use of lard oil is permitted. (See note under lubricant No. 11.) Cost, per gallon, in drums, $0.13.

I. C. C. No. 5. *Locomotive engine oil*—For all locomotives, running gear of all locomotive cranes, deck machinery of dredges (except engines,) and for cold saws in machine shops. Cost, per gallon, in drums, $0.11.

I. C. C. No. 6. *Turbine engine oil*—For all step bearings of turbines in the Miraflores and Gatun power plants only. This oil is also known as step bearing oil. Cost, per gallon, in drums, $0.13.

I. C. C. No. 7. *Gas engine oil*—For the cylinders of internal combustion engines. Cost, per gallon, in drums, $0.23.

I. C. C. No. 8. *Westinghouse crank case oil*—For use in the crank cases of Westinghouse vertical compound engines only. Cost, per gallon, in cans, $0.20.

I. C. C. No. 9. *Car oil*—For the journals of all cars, passenger coaches, locomotive tenders, and rolling stock generally; for steam shovel bearings where not equipped with grease cups, and for tripod drills and switches. Cost, per gallon, in drums, $0.10.

I. C. C. No. 10. *Transformer oil*—For use in the electrical subdivision in aircooled transformers only. Cost, per gallon, in drums, $0.28.

I. C. C. No. 11. *Lard oil*—For hand torches for illuminating purposes only on marine equipment. On land, for shop use on pipe-threading machines; and it may be substituted for stationary engine oil (I. C. C. No. 4,) when necessary, on dies of turret machines and on bolt cutters, when working refined iron or tough machinery steel. The use of this oil should be minimized to the greatest possible extent on account of its high cost. Cost, per gallon, in cans, $0.80.

I. C. C. No. 12. *Ammonia cylinder oil*—For the internal lubrication of cylinders of ammonia compressors only. Cost, per gallon, in drums, $0.35.

I. C. C. No. 13. *Crude oil*—For the lubrication of steam shovel chains, cables, where designated, and general purposes where oils and greases have been used as a preservative. Cost, per gallon, in barrels, $0.0262.

LUBRICATING GREASES.

I. C. C. No. 20. *Nonliquid oil*—This is an oil of the consistency of vaseline, for the lubrication of sheaves of carriages on the Lidgerwood cableways at Gatun, for air brake cylindrs, and triple valves, and such pneumatic drills and motors as may be equipped for the use of grease. Cost, per pound, in barrels, $0.05.

I. C. C. No. 21. *Cup grease (yellow)*—For all classes of lubrication where grease is used in compression cups. This grease is being received in two consistencies, No. 3 and No. 5, the No. 3 of lesser consistency to be used on machinery subject to normal temperature, and the No. 5 of heavier consistency to be used on machinery subject to higher temperatures. Cost, per pound, in cans, $0.06.

I. C. C. No. 22. *Gear grease*—For all classes of lubrication requiring grease for which compression cups are not adapted. This includes the center and side bearings of cars, cranes, and steam shovels, also wire cables, both standing and running, etc. Cost, per pound, in cans, $0.0275.

I. C. C. No. 23. *Cable grease*—For the "Interlocked-wire" track cables of the Gatun cableways exclusively. Cost, per pound, in barrels, $0.0275.

I. C. C. No. 24. *Crank pin grease*—For use on locomotive crank pins only where pressure cups are used. Care should be exercised not to confound this grease with cup grease Nos. 3 and 5, (I. C.C. No. 21,) which is not suitable for this purpose. Cost per pound, in barrels, $0.0525.

ILLUMINATING OILS.

I. C. C. No. 30. *Signal oil*—For use in railroad lanterns only, and in the cab lights of engines. Cost, per gallon, in cans, $0.37.

I. C. C. No. 31. *Kerosene oil*—For use in locomotive headlights, passenger coach, and similar lamps, ordinary lanterns, and for cleaning purposes. Cost, per gallon, in drums, $0.1008; in cans, $0.1735.

GASOLINE.

I. C. C. No. 40. *Gasoline*—For use on gasoline launches, motor cars, blow torches, cleaning, etc. Cost, per gallon, in drums, $0.1863; in cans, $0.2590.

Standard hand oilers and oil cans should be used as provided in circular No. 338.

A copy of this circular shall be posted in all stationary plants, shops, engine houses, storehouses, oil houses, on all marine equipment, and in such other places as may be necessary to insure the cognizance of same by all concerned.

Substitutions of cheaper grades of the standard I. C. C. and P. R. R. lubricants given above, may be approved by the traveling engineers, wherever practicable, the above circular defining in a general way their accepted uses.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Inspector of Fuel and Lubricants.

CULEBRA, C. Z., August 21, 1911.

CIRCULAR NO. 266-H:

Effective this date, Mr. James E. Johnson is appointed inspector of fuel and lubricant consumption, and, as such, will report directly to the Assistant to the Chief Engineer.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Waste of Coal in Unloading.

CULEBRA, C. Z., August 23, 1911.

CIRCULAR NO. 402:

Waste of coal resulting from unloading it directly on the ground at different points on the Isthmus is an appreciable item, and should be minimized by exercising due care, and, wherever possible, by providing a floor of old wood or metal material on which to unload it. Scattered piles of unused coal should in all cases be cleaned up and utilized as the work proceeds.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Charges Against Employes.

CULEBRA, C. Z. August 25, 1911.

CIRCULAR NO. 403:

Any employe, against whom charges of any kind are made, shall be permitted to be present during any formal hearing or investigation conducted where the testimony of witnesses is heard by a board or official, and to call or cross-examine witnesses.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Shop Expense Percentage.

CULEBRA, C. Z., August 24, 1911.

HEADS OF DEPARTMENTS AND DIVISIONS:

In accordance with the provisions of circular No. 169-E, the following shop expense percentage for each shop is hereby fixed, effective September 1, 1911, and will be applied, until further orders, to the distributed labor used in all shop work, in accordance with the provisions of circular No. 264-A, viz.:

DIVISION OR SHOP.	Shop expense per centum.
Mechanical Division	37.5
Empire shop	30
Drydock shop	45
Balboa shop	25
Porto Bello	20

Circular letter from this office dated May 5, 1911, is revoked.

GEO. W. GOETHALS.
Chairman and Chief Engineer

Oil Cans.

CULEBRA, C. Z., August 24, 1911.

CIRCULAR NO. 338-B:

The following additions and amendments to circular No. 338 are hereby approved for the guidance of all concerned:

No. 40. Twenty-four-inch spring hand oiler (standard locomotive type) for use on locomotives and steam shovels only. Capacity, 2 pints.

No. 47. Eighteen-inch spring hand oiler (same type and material as No. 40), for use on dredges, cranes, cableways, and smaller equipment than locomotives and steam shovels.

Requisitions for the above will be honored only after approval by the traveling engineers.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Standard Coal Scoop.

CULEBRA, C. Z., August 25, 1911.

CIRCULAR NO. 404:

Hereafter, the No. 3 scoop will be adopted as the standard for use of firemen on all coal-burning plant and equipment, and in all stationary plants where coal is used as fuel. Future requisitions for the purchase of scoops in the United States for this purpose shall specify the No. 3 scoop.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Care in Unloading Coal Cars.

CULEBRA, C. Z., August 25, 1911.

CIRCULAR NO. 405:

My attention has been invited to the fact that coal is being left on the ends of cars when unloading them. This is an uneconomical practice, and should be discontinued. It is directed that hereafter in the unloading of coal cars, coal be removed from the ends as well as from the body of the cars, and failure to do this will render the employe or employes responsible liable to a suspension of from one to five days for each offence. Heads of departments and divisions will be expected to see that this order is enforced.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Misdirected Letters.

ANCON, C. Z., August 30, 1911.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

LETTERS UNCALLED FOR AUGUST 23.

Barte, Geo. A.
Corbett, James B. (2d class)
Dakin, L. W.
Demuth, Mrs. Ed.
Greame, Miss Lucy (pkg.)
Hollinger, A. E. (2)
Jones, J. W.
Moyer, Jannie
Stafford, Percy F.
Walton, Geo.
Wheadren, Thomas
Whitsel, F. W. (2d class)
Wilkins, John

LETTERS UNCALLED FOR AUGUST 30.

Arner, Otto
Cochran, Richard L.
Dumetz, Geneva
Dwyer, John Charles
Fisher, John
Froehlick, Henry
Froman, Oliver
Graham, Inez
Kinner, Millmer
McEvers, Mrs. Kado
St. John, S. W.
Seymour, Miss Mildred R.
Sims, L. C.
Treiner, J. G.
Tremaine, Paul H.
Turner, W. A.
Wheeler, William

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending September 6, 1911. (75th meridian time):

DATE.	Low.	High.	Low.	High.	Low.
	A.M.	A.M.	P.M.	P.M.	P.M.
August 31	2.30	8.29	3.00	8.58	......
September 1	3.20	9.15	3.55	10.00	......
September 2	4.25	10.15	5.00	11.15	......
September 3	5.35	11.30	6.10	......	......
			A.M.		
September 4	......	12.40	6.47	12.45	7.10
September 5	......	1.40	7.45	1.45	8.03
September 6	......	2.20	8.30	2.30	8.45

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Col. Geo. W. Goethals, U. S. A., Chairman, Culebra.

Col. H. F. Hodges, U. S. A., Culebra.

Lieut.-Col. D. D. Gaillard, U. S. A., Empire.

Lieut.-Col. Wm. L. Sibert, U. S. A., Gatun.

Civil Engineer H. H. Rousseau, U. S. N., Culebra.

Col. W. C. Gorgas, U. S. A., Ancon.

Mr. Maurice H. Thatcher, Ancon.

Mr. Joseph Bucklin Bishop,
Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

Headquarters, Culebra.

Col. Geo. W. Goethals, Chairman and Chief Engineer.

William Howard May, Secretary to the Chairman.

C. A. McIlvaine, Chief Clerk.

John K. Baxter, Assistant Chief Clerk.

Ad Faure Chief Accountant.

H. S. Farish, Surveying Officer.

Caleb M. Saville, Assistant Engineer.

Col. H. F. Hodges, AssistantChief Engineer.

C. O. Carlson, Secretary.

Edward Schildhauer, Electrical and Mechanical Engineer.

Henry Goldmark, L. D. Cornish, T. B. Mönniche, Designing Engineers.

Walter F. Beyer, Assistant Engineer.

Civil Engineer H. H. Rousseau, Assistant to the Chief Engineer.

J. C. Parsons, Secretary.

Maj. T. C. Dickson, U. S. A., Inspector of Shops.

A. B. Nichols, Office Engineer.

James G Craig, Senior Traveling Engineer.

D. E. Irwin, Junior Traveling Engineer.

Central Division.

Headquarters, Empire.

Lieut.-Col. D. D. Gaillard, Division Engineer.

W I Beam, Chief Clerk.

A. E. Bronk, General Inspector.

A. S. Zinn, Resident Engineer.

Mark W. Tenny, Assistant Engineer.

J. W. Sneed, Superintendent Construction.

J. M. Hagan, Superintendent Construction.

Joseph Little, Superintendent Construction.

W. T. Reynolds, Superintendent Construction.

A. Sessions, Superintendent Transportation.

William H Bates, Supt. Steam Shovel Repairs.

Dan E. Wright, Supt. Municipal Work and Pipe Lines.

Atlantic Division.

Headquarters, Gatun.

Lieut.-Col. Wm. L. Sibert, Division Engineer.

Maj. Chester Harding, U. S. A., Assistant Division Engineer.

(—————————) Chief Clerk.

Maj. J. P. Jervey, U. S. A., Resident Engineer.

Maj. G. M. Hoffman, U. S. A., Resident Engineer.

Geo. M. Wells, Office Engineer.

Pacific Division.

Headquarters, Corozal.

S. B. Williamson, Division Engineer.

John M. G. Watt, Assistant Division Engineer.

J. C. Keller, Chief Clerk.

W. G. Comber, Resident Engineer.

H. O. Cole, Resident Engineer.

Frank Cotton, Assistant Engineer.

H. D. Hinman, Assistant Engineer.

W. L Thompson, Assistant Engineer.

James Macfarlane, Supt. of Dredging.

Mechanical Division.

Headquarters, Gorgona.

A. L. Robinson, Superintendent.

William Taylor, Chief Clerk.

Henry Schoellhorn, Mechanical Engineer.

Subsistence.

Headquarters, Cristobal.

Maj. Eugene T. Wilson, U. S. A., Subsistence Officer.

Capt. Frank O. Whitlock, U. S. A., Assistant Subsistence Officer.

John Burke, Manager of Commissaries.

W. F Shipley, Chief Clerk.

Quartermaster's.

Headquarters, Culebra.

Lieut.-Col. C. A. Devol, U. S. A., Chief Quartermaster.

Capt. R. E. Wood, U. S. A., Assistant Chief Quartermaster.

Lieut Walter D. Smith, U. S. A., Constructing Quartermaster.

C. H. Mann, Chief Clerk.

Capt. C. Nixon, U. S. A., Depot Quartermaster, Mount Hope.

C. L. Parker, Assistant Depot Quartermaster, Mount Hope.

Chas. R. Bryon, Storekeeper, Gatun.

R. K. Morris, Storekeeper, Gorgona.

D. H. Beaman, Storekeeper, Empire.

C. A. Gilmartin, Storekeeper, Miraflores.

X. D. Holt, Storekeeper, Balboa.

District Quartermasters.

B. C. Poole, Ancon and Balboa.

J. H. K. Hunphreys, Corozal and Miraflores.

J. T. Smith, Pedro Miguel and Paraiso.

H. F. Sedwick, Culebra.

W. G. Ross, Empire.

J. M. King, Las Cascadas and Bas Obispo.

R. C. Shady, Gorgona.

O. S. Farrar, San Pablo, Mamei, Tabernilla and Bohio.

R. M Gamble, Gatun.

Roy R. Watson, Cristobal, Toro Point, and Nombre de Dios.

Chas. D. Morgan, Porto Bello.

Civil Administration.

Headquarters, Ancon.

Maurice H. Thatcher, Head of the Department.

G. A. Ninas, Chief Clerk.

C. L. Luedtke, Assistant Chief Clerk.

Tom M. Cooke, Chief, Division of Posts, Customs and Revenues, Ancon.

Arthur McGown, Deputy Collector, Ancon.

Jno. L. Storla, Deputy Collector, Cristobal.

J. P. Fyffe, Chief of Police, Ancon.

Capt. Chas. W. Barber, U. S. A., Assistant Chief of Police, Ancon.

C. E. Weidman, Fire Chief, Cristobal.

Chas. F. Koerner, Assistant Fire Chief, Cristobal

M. E. Gilmore, Supt. Public Works, Ancon.

J. J. Reidy, Asst. Supt. Public Works, Colon.

F. A. Gause, Superintendent of Schools, Ancon.

Edgar P. Beck, Treasurer of Canal Zone, Empire,

W. G. Comber, Chairman; James Macfarlane.
C. J. Anderson, Board of Local Inspectors.

Canal Zone Judiciary.

Headquarters, Ancon.

Supreme Court—H. A. Gudger, Chief Justice.

Walter Emery, Clerk, Ancon.

Thomas E. Brown, Jr., Associate Justice.

Circuit Court, First Circuit—H. A. Gudger, Judge, Ancon.

Walter Emery, Clerk.

Circuit Court, Second Circuit—(—————————)

Elbert M. Goolsby, Clerk.

Circuit Court, Third Circuit—Thomas E. Brown, Jr.

Nelson R. Johnson, Clerk, Cristobal

William H. Jackson, Senior District Judge, Ancon.

M. C. Rerdell, District Judge, Cristobal.

S. E. Blackburn, District Judge, Ancon.

Edgar S. Garrison, District Judge, Empire.

J. B. March, District Judge, Gorgona.

Law.

Headquarters, Ancon.

Frank Feuille, Counsel and Chief Attorney.

William K. Jackson, Prosecuting Attorney.

Chas R. Williams, Assistant Prosecuting Attorney.

A. A. Greenman, Land Agent.

Sanitation.

Headquarters, Ancon.

Col. W. C. Gorgas, Chief Sanitary Officer.

Lieut.-Col. John L. Phillips, U. S. A., Assistant Chief Sanitary Officer.

Dr. M. E. Connor, General Inspector.

Harry E. Bovay, Chief Clerk.

Lieut.-Col. Charles F. Mason, U. S. A., Superintendent Ancon Hospital, Ancon.

Surgeon Wm. H. Bell, U. S. N., Superintendent Colon Hospital, Cristobal.

Surgeon J. C. Perry, P. H. and M. H. S., Chief Quarantine Officer, and Health Officer, Panama.

Surgeon Claude C. Pierce, P. H. and M. H. S. Quarantine Officer, Colon.

Dr. Fleetwood Gruver, P. H. and M. H. S., Quarantine Officer, Panama.

Joseph A. LePrince, Chief Sanitary Inspector, Ancon.

Dr. A. E. Mayner, Health Officer, Colon.

Disbursements.

Headquarters, Empire.

Edward J. Williams, Disbursing Officer.

Wm. M. Wood, Assistant Disbursing Officer.

J. P. Waldron, Cashier.

C. C. Metcalf, Paymaster, Ancon.

C. E. Gilmore, Paymaster, Cristobal.

Examination of Accounts.

Headquarters, Empire.

H. A. A. Smith, Examiner of Accounts.

T. L. Clear, Assistant Examiner of Accounts.

Purchasing Department.

Headquarters, Washington, D. C.

Maj. F. C. Boggs, U. S. A., General Purchasing Officer.

C. E. Dole, Chief Clerk.

Capt. Courtland Nixon, Purchasing Agent on the Isthmus.

Maj. Wendell L. Simpson, U. S. A., Assistant Purchasing Officer, 24 State Street, New York City.

Capt. F. H, Lawton, U. S. A., Assistant Purchasing Agent, 614 Whitney-Central Building, New Orleans, La.

Panama Railroad Company.

Headquarters, Colon.
(General offices, 24 State Street, New York.)

J. A. Smith, General Superintendent, Colon,

R. L. Mock, Chief Clerk.

Lieut. Frederick Mears, U. S. A., Chief Engineer.

A. K. Stone, Master of Transportation.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line; the Panama Railroad Company's dates being subject to changes

NEW YORK TO CRISTOBAL.

Colon	P. R. R.	Thursday	Aug. 24
Cristobal	P. R. R.	Tuesday	Aug. 29
Allianca	P. R. R.	Wednesday	Aug. 30
Panama	P. R. R.	Tuesday	Sept 5
Advance	P. R. R.	Monday	Sept. 11
Colon	P. R. R.	Monday	Sept. 18
Allianca	P. R. R.	Saturday	Sept. 23
Panama	P. R. R.	Friday	Sept. 29
Advance	P. R. R.	Thursday	Oct. 5
Colon	P. R. R.	Thursday	Oct. 12
Allianca	P. R. R.	Wednesday	Oct. 18

CRISTOBAL TO NEW YORK.

Advance	P. R. R.	Wednesday	Aug. 30
Colon	P. R. R.	Tuesday	Sept. 5
Allianca	P. R. R.	Monday	Sept. 11
Panama	P. R. R.	Sunday	Sept. 17
Advance	P. R. R.	Saturday	Sept. 23
Colon	P. R. R.	Saturday	Sept. 30
Allianca	P. R. R.	Friday	Oct. 6
Panama	P. R. R.	Thursday	Oct. 12
Advance	P. R. R.	Tuesday	Oct. 17
Colon	P. R. R.	Tuesday	Oct. 24
Allianca	P. R. R.	Monday	Oct. 30

NEW YORK TO COLON.

Almirante	U. F. C.	Thursday	Aug. 24
Prinz Aug. Wilhelm	H.-A.	Saturday	Aug. 26
Santa Marta	U. F. C.	Thursday	Aug. 31
Prinz Sigismund	H.-A.	Friday	Sept. 1
Oruba	R. M.	Saturday	Sept. 2
Metapan	U. F. C.	Thursday	Sept. 7
Prinz Joachim	H.-A.	Saturday	Sept. 9
Zacapa	U. F. C.	Thursday	Sept. 14
Prinz Eitel Friedrich	H.-A.	Friday	Sept. 15
Magdalena	R. M.	Saturday	Sept. 16
Almirante	U. F. C.	Thursday	Sept. 21

COLON TO NEW YORK.

Zacapa	U. F. C.	Thursday	Aug. 31
Prinz Eitel Friedrich	H.-A.	Saturday	Sept. 2
Magdalena	R. M.	Tuesday	Sept. 5
Almirante	U. F. C.	Thursday	Sept. 7
Prinz Aug. Wilhelm	H.-A.	Tuesday	Sept. 12
Santa Marta	U. F. C.	Thursday	Sept. 14
Prinz Sigismund	H.-A.	Saturday	Sept. 16
Clyde	R. M	Tuesday	Sept. 19
Metapan	U. F. C.	Thursday	Sept. 21
Prinz Joachim	H.-A.	Tuesday	Sept. 26
Zacapa	U. F. C.	Thursday	Sept. 28
Prinz Eitel Frederich	H. A.	Saturday	Sept. 30

NEW ORLEANS TO COLON.

Atenas	U. F. C.	Saturday	Aug. 26
Turrialba	U. F. C.	Saturday	Sept. 2
Abangarez	U. F. C.	Saturday	Sept. 9
Atenas	U. F. C.	Saturday	Sept. 16
Turrialba	U. F. C.	Saturday	Sept. 23

COLON TO NEW ORLEANS.

Abangarez	U. F. C.	Thursday	Aug. 31
Atenas	U. F. C.	Thursday	Sept. 7
Turrialba	U. F. C.	Thursday	Sept. 14
Abangarez	U. F. C.	Thursday	Sept. 21

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct leave on Thursdays at 3 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

CANAL RECORD

Volume V. · ANCON, CANAL ZONE, WEDNESDAY, SEPTEMBER 6, 1911. No. 2.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Naos Island Breakwater.

The board appointed by the Chief Engineer on July 8, consisting of Messrs. S. B Williamson, W. G. Comber, M. W Tenny, and W. T. Reynolds has submitted the following report, the recommendation in which has been adopted:

"The outer end of the filling is now (August 12) 4,200 feet from the island, and the trestle work extends 1,500 feet beyond, leaving an opening of 2,700 feet between the end of the trestle and the island. Two plans for completing the work were discussed, as follows:

"First—To drive a trestle parallel to, and about 300 feet west of, the present structure, swinging the former onto the axis of the breakwater after clearing the trestle now in position, and continuing along said axis to the island; the idea being that filling the present trestle may continue, while at the same time, trains may be run out to the end of the proposed trestle and filling begun from the island after sufficient material has been dumped along the line of the new trestle to make it perfectly secure.

"The second plan contemplates the construction of a double trestle, similar to that employed in the construction of Toro Point breakwater. * * * * * It is proposed to first fill on both sides of the structure for its entire length up to mean tide, using Lidgerwood trains, then begin at the outer or island end, to fill from mean tide to full height.

"In both plans it is proposed that rock, dredged from the Canal channel by the Pacific Division, shall be deposited in front of the trestle, so as to form a base about 200 feet wide, and that the trestle constructed in future shall be of a better type than that driven previously.

"The board believes that the second method is preferable and the most economical, and, if adopted, will reduce the time required for completion under the present method by approximately one-half.

"It is further thought that the additional width and improvement in the type of trestle will materially increase its stability. This opinion seems to be borne out by the experience so far at Toro Point, where there is about the same average depth of soft material. The report of Mr. Vandeburgh of October 14, 1909, seems to indicate that the material at the Naos Island breakwater is softer, and contains a smaller proportion of sand than that along the site of the Toro Point breakwater. The board, however, is not convinced that this is proved conclusively by Mr. Vandeburgh's test, because the pipe used for collecting the samples was so arranged that it probably gathered samples from the surface in most cases. It is also noted that the worst slips on the dike took place where the samples showed sand only, and the penetration of the pipe was small.

"Attention is especially invited to the proposed method of filling in the second plan, viz.: To first fill the entire length to about mean tide. then complete the filling from the outer end. This is recommended, because experience has shown that there is no movement of the trestle until filling above mean tide is begun. The filling below mean tide will increase the stability of the trestle, and, if subsequent filling is begun from the outer end, train service will not be interrupted, even though there be a movement of the structure at the point of filling.

"The board has the honor to recommend the second plan, viz.: The use of a double trestle, and suggests that the filling of the 1,500 feet of trestle now in place be continued, as heretofore, which will require about five months, and that in the meantime, the necessary material be obtained and a double trestle started from the outer end of the present structure, and continued to Naos Island. * * * * *."

Both the Pacific and Central Divisions have begun work on the plan outlined in the recommendation of the board.

Rainy Season Record in Culebra Cut.

The total excavation in the Central Division for the month of August, was 1,464,294 cubic yards, of which 1,442,402 cubic yards were taken from the Culebra section. This is the greatest amount of material ever removed from the Culebra section in any month of the rainy season since the commencement of the work by the United States.

Previous August records of excavation in the Culebra section are, as follows:

1911—1,442,402 cubic yards.
1910—1,377,714 cubic yards.
1909—1,173,370 cubic yards.
1908—1,171,927 cubic yards.

Regiment of Infantry for Canal Zone.

A regiment of United States infantry will leave Galveston, Texas, on or about September 12, and will arrive in the Canal Zone about eight days later. It will go into temporary camp near Las Cascadas. Two old labor camps, consisting of old French barracks, have been fitted up for the enlisted men, with Standee bunks two tiers high, and a separate mess for each of the twelve companies. Two battalions will be stationed at the old Whitehouse labor camp, and one at the Las Cascadas labor camp. The building formerly used by the Central Division as a time office will be the office of the commanding officer. The officers will be quartered in two type-18, and one type-16, bachelor quarters in Las Cascadas village The present complement of the regiment is 816 men and 50 officers. A battalion of U. S. Marines has been stationed in the Canal Zone since 1904.

Chartered Vessel for P. R. R. Service.

The steamer *Lewis Luckenbach*, 3,905 gross tons, has completed its first voyage from Philadelphia to Cristobal and return, as a ship of the Panama railroad service. It was chartered from the original charterers, Bates & Chesebrough of the California-Atlantic line on June 29, at the rate of $8,712.50 a month, and arrived at Colon on its first voyage with a full cargo of 6,000 tons on August 1. It sailed on the return voyage on August 18. The charter runs for six months.

Two Years of Lock Building in the Pacific Division.

Concrete construction in the locks at Pedro Miguel was begun on September 1, 1909, two years ago last Friday, and, at the close of work on that date, there had been laid a total of 705,698 cubic yards, place measurement, leaving still to be placed 149,803 cubic yards. During the first year of operations there were laid 261,964 cubic yards, and, during the second year, 443,734 cubic yards, place measurement.

From the date of beginning up to July 6, 1910, concrete was produced by small mixers stationed in the lock pit. and by two auxiliary 2-cubic yard mixers, situated on the east and west banks of the locks, respectively. On the latter date, the two berm cranes, and three of the chamber cranes of the permanent handling plant, were placed in operation, and, by the following month, all the units were working.

During the past year, the concrete work has been principally confined to the building of the center and side walls, which are now practically completed, and the general work had so far advanced by May 20 of the present year as to permit of the dismantling of a part of the construction plant. Two berm cranes and two chamber cranes have been taken down and reerected at Miraflores. The two chamber cranes remaining at Pedro Miguel are mainly used in lifting the iron work and other heavy material into place, although a small portion of the concrete output is handled by them when it is advantageous to do so. The mixing plant now consists of three 2-cubic yard, and three ½-cubic yard

NOTES OF PROGRESS.

(*Continued.*)

mixers. Part of their output is dumped directly into the forms, and part is conveyed into place by locomotive cranes and derricks.

The work has been performed in 8-hour working days, and the amount of concrete placed by months from the beginning of the work on September 1, 1909, to September 1, 1911, was, as follows:

MONTHS.	1909.	1910.	1911.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
January	....	16,273	38,513
February	....	13,218	37,011
March	....	18,793	44,716
April	....	24,522	28,635
May	....	29,576	19,135
June	....	30,631	18,243
July	....	41,464	19,906
August	....	51,264	*20,736
September	2,370	50,702	....
October	8,310	61,422	....
November	10,169	64,248	....
December	13,007	42,834	....
Total	33,856	444,947	226,895

*All the above figures, except for August, are based on place measurement.

The concrete remaining to be laid consists principally of wing wall construction, the building of the north center guide wall, the completion of the south center guide wall, construction of Stoney buttresses, and the arch in the east wall, the arches in the center and west wall having been practically finished. The distribution of the concrete yet to be placed, by cubic yards, is about as follows:

LOCATION.	Plain.	Reinforced.
Above upper guard gate—	*Cu. Yds.*	*Cu. Yds.*
East wall	12,532	205
West wall	10,351	235
Center wall	24,030	220
Floors	7,228	....
Northeast wing wall	14,600	....
Northwest wing wall	14,600	....
Upper center guide wall	....	26,000
Below upper guard gate—		
East wall	7,063	52
West wall	2,599	531
Center wall	3,418	402
Southeast wing wall	....	3,765
Southwest wing wall	....	507
Center guide wall	21,465	....
Total	117,886	31,917
Grand total		149.803

The concrete work at Miraflores Locks was begun in May, 1910, and the amounts laid, by months, up to September 1, follows:

MONTHS.	1910.	1911.
	Cu. Yds.	*Cu. Yds.*
January	....	24,018
February	....	20,896
March	....	31,173
April	....	38,758
May	27	36,154
June	1,603	26,536
July	3,672	32,840
August	6,030	*60,954
September	18,133	....
October	22,159	....
November	23,871	....
December	21,533	....
Total	97,028	271,329

*Bucket measurement; all other figures based on place measurement.

The total amount of concrete laid at the Pedro Miguel and Miraflores locks from the date of beginning up to August 1, place measurement, is as follows:

PEDRO MIGUEL LOCKS.

YEAR.	*Cubic Yards.*
1909	33,856
1910	444,947
1911, to August 1	206,159
Total	684,962

MIRAFLORES LOCKS.

1910	97,028
1911, to August 1	210,375
Total	307,403
Grand total	992,365

The total amount of concrete laid at Pedro Miguel Locks in August was 20,736 cubic yards, and at Miraflores Locks, 60,954 cubic yards, bucket measurement, making the grand total of concrete laid in the Pacific Division locks to September 1 about 1,074,055 cubic yards.

CONCRETE WORK IN THE LOCKS.

About 63 per cent of the concrete for all the locks is in place, the amount at the close of the work on September 2, being 2,675,008 cubic yards, out of a total of approximately 4,199,400. A total of 32,879 cubic yards of concrete was laid in the locks during the week ending September 2.

GATUN LOCKS.

Over 78 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on September 2, being 1,570,846 cubic yards, out of a total of 2,000,000 A statement of the amount of concrete placed in the locks each working day for the week ending September 2, and of the total, follows; and a similar statement for the work in the Spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
August 28	1,854	34.54	8	440	7.40	2	124	2,418
August 29	1,578	23.54	8	496	8.40	2	136	2,210
August 30	1,696	27.52	6	380	7.40	2	114	2,190
August 31	2,024	32.26	6	420	7.40	2	158	2,602
September 1	1,768	27.06	6	292	6.40	2	94	2,154
September 2	1,764	27.50	4	500	8.40	2	108	2,372
*Portable mixers	....	....	......	392	....	......	....	392
Total	10,684	174.02	6.33	2,920	47.00	2	734	14,338
Previously reported	....	....	......	....	....	......	....	1,556,508
Grand total	....	....	......	....	....	......	....	1,570,846

*The 392 yards shown for the portable mixers are reinforced concrete, and were placed on the following days: August 28th, 81½; August 29th, 76; August 30th, 77½; August 31st, 61; September 1st, 59; September 2nd, 37.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 85 per cent completed, 716,553 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on September 2. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
August 28	708	19.00	3	254	16.83	3	....	962
August 29	770	19.00	3	195	11.00	2	....	965
August 30	686	19.00	3	123	6.00	1	....	809
August 31	560	16.00	3	171	14.00	3	....	731
September 1	556	16.00	3	82	3.50	1	....	638
September 2	590	17.00	3	60	2.50	1	....	650
Total	3,870	106.00	3	885	53.83	1.83	....	4,755
Previously reported	....	....	......	....	....	......	4,441	711,798
Grand total	....	....	......	....	....	......	4,441	716,553

MIRAFLORES LOCKS

Over 28 per cent of the concrete for the system of two twin locks at Miraflores was in place on September 2 the total amount on that date being 387,609 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Aug. 28	1,130	25.33	5	962	15.27	2	180	11.50	2	....	2,272
Aug. 29	1,240	25.75	5	1,072	17.33	2	216	17.33	2	....	2,528
Aug. 30	1,318	30.50	6	1,016	16.90	2	92	6.00	1	....	2,426
Aug. 31	1,182	28.10	6	1,060	15.90	2	25	1.50	1	....	2,267
Sept. 1	1,342	29.17	6	946	15.00	2	....	....	......	....	2,288
Sept. 2	1,120	22.17	6	818	14.27	2	67	5.00	1	....	2,005
Total	7,332	161.02	5.67	5,874	94.67	2	580	41.33	1.17	....	13,786
Previously reported	....	....	......	....	....	......	....	....	......	3,693	373,823
Grand total	....	....	......	....	....	......	....	....	......	3,693	387,609

ORDINANCES.

Amendment to Ordinance Providing for Certain Taxes and Licenses in the Canal Zone Other Than for the Sale of Intoxicating Liquors.

Be it enacted by the Isthmian Canal Commission, that Section 7 of the Ordinance providing for certain taxes and licenses in the Canal Zone other than for the sale of intoxicating liquors be, and the same hereby is, amended by adding at the end thereof the following:

Provided: That the Collector of Revenues may refuse to issue a license for any of the objects named in paragraphs (b), (e), (f), (g), (i), (j), and (k) if the character of the applicant is such as to warrant the belief that the exercise of the privilege granted by the license would not be conducted in an orderly and lawful manner, and *Provided further*, That any license granted pursuant to the provisions of paragraphs (b), (e), (f), (g), (i), (j), and (k) of this section shall at once become null and void upon conviction in any court of the Canal Zone of a violation of law in the exercise of the privilege granted by such license, and *Provided further*, That licenses granted pursuant to the provisions of paragraphs (e), (g), (i), (j), and (k) hereof shall not authorize the exercise of such privileges during the hours from 12 midnight to 7 a. m.

Enacted by the Isthmian Canal Commission, August 5, 1911.

Approved by the Secretary of War, August 22 1911.

Ordinance Providing for Night Quarantine Inspection of Vessels at the Port of Colon.

Be it enacted by the Isthmian Canal Commission, as follows:

SECTION 1. That vessels with perishable cargo arriving at Colon after sunset with the intention of sailing within a few hours, or before daylight of the following day, will be received by the quarantine officials until 10 p. m.

SECTION 2. Such vessels shall not be allowed to come to the wharf, and shall disembark and embark passengers by means of a tug.

SECTION 3. A tug shall be furnished the quarantine officer for the purpose of the visit of inspection.

SECTION 4. Any vessel, steamship company, or agent of a steamship company requesting this service, shall pay to the Isthmian Canal Commission the sum of one hundred dollars ($100) United States currency, in addition to the expense of the tug furnished under Section 3 of this ordinance for each vessel so inspected.

Enacted by the Isthmian Canal Commission, August 5, 1911.

Approved by the Secretary of War, August 22, 1911.

Ordinance Establishing Market Regulations for the Canal Zone.

Be it enacted by the Isthmian Canal Commission, that the following regulations for the conduct of public markets, and the leasing of space therein, shall be in force on and after their approval by the Secretary of War:

1. The markets are provided as places for the sale to residents of the Canal Zone of meat, fish, vegetables, fruits, and other articles of food, and the space in them will not be leased for any other purpose; *Provided*, That, in the discretion of the Superintendent of Public Works, not more than one-half of the space available in a public market may be leased for the sale of dry goods, groceries, notions, cigars, tobacco, soda water, and other soft drinks, and for use as lunch counters and news stands where no application has been received for the leasing of the space for the sale of food products, but the Superintendent of Public Works shall have authority to cancel the assignment of space leased for the purposes enumerated in this proviso, should application be made for such space for use for the sale of food products; *Provided further*, That, when space is leased for the sale of dry goods, groceries notions, cigars, tobacco, soda water. and other soft drinks, and for use as lunch counters and news stands, the rate of rental shall be twenty (20%) per cent, in advance, over that charged when used for the sale of food products.

2. All assignments of space shall be for the period of one month, beginning on the 16th day thereof, and ending on the 15th day of the succeeding month; except that assignments made after the first of any month shall be for a half month, counting from the first of the month, and shall be paid for at one-half the monthly rate; and except also that this shall not apply to tables and other similar space rented by the day, and so indicated on the posted plat.

3. There shall be posted in a conspicuous place in each market a plat signed by the Superintendent of Public Works, and Collector of Revenues, showing the sizes and rates of rental of the various stalls, and other divisions of space.

4. Application for assignment of space shall be made to the Market Inspector. If approved, the inspector will issue an assignment, indicating the space assigned, the period of assignment, the purpose for which it is to be used, and the amount of rental to be paid to the Deputy Collector of Revenues. Upon return of the assignment, with the exhibition of the Deputy Collector's receipt, possession of the space will be given.

5. Not more than one stall or other division of space in each market will be assigned to any one person, except by special authority of the Superintendent or Assistant Superintendent of Public Works.

6 Lessees of space will not be permitted to make any changes in the arrangement of partitions, shelves, etc. Requests for desired changes will be made of the Market Inspector. If approved by him, he will secure an estimate of the cost of the work, and, upon deposit with him by the lessee of the amount of the estimate, the work will be done by the Isthmian Canal Commission. The excess of the deposit, if any, over the cost of the work, will be returned to the lessee.

7. All stalls and other divisions of space shall be thoroughly swept at the close of each day. Special attention shall be given to the spaces used for the sale of meat and fish· the counters, blocks, etc., used in them shall be scrubbed with soap and water as often as necessary to keep them in good sanitary condition. All decayed fruit and vegetables, and other dirt and refuse, shall be removed and deposited in the sanitary cans provided for that purpose. All articles in bulk shall be kept in bags, barrels, or boxes, so that they can be moved in cleaning. Lessees shall be responsible for the cleanly and sanitary condition of the space assigned them, and shall carry out such special instructions to that end as may be given them by the Market Inspector or his authorized assistant. The Market inspector will be responsible for the cleanly and sanitary condition of the market outside of stalls and other space assigned to lessees.

8. Lounging or loitering around the market will not be permitted. Lessees are expected to enforce this prohibition as to the space assigned them.

9. The hour for opening and closing each market shall be fixed by the Superintendent of Public Works, and posted in a conspicuous place in the market.

10. Any complaint respecting a market should be addressed to the Superintendent of Public Works, Ancon, C. Z.

11. The continued occupancy of space in any market after the expiration of the period for which rental has been paid is declared a misdemeanor, and, upon conviction thereof, shall be punishable by a fine not exceeding $25, or imprisonment in jail not exceeding thirty (30) days, or both, in the discretion of the court. Any other violation of these regulations by a lessee shall be considered sufficient cause for the cancellation of his assignment; but such cancellation shall not relieve the offending person from prosecution under any penal law or ordinance he may violate.

12. These regulations shall be posted in a conspicuous place in each market.

Enacted by the Isthmian Canal Commission, August 5, 1911.

Approved by the Secretary of War, August 22, 1911.

The Six-Year Men.

The following circular letter has been sent out to employes who have completed six years' continuous service on the Isthmus. The committee in charge requests that men whose names may have been omitted from its mailing list, will communicate with its chairman:

"At a meeting in Panama on August 12, preliminary steps were taken to perfect an organization of employes of the Isthmian Canal Commission and the Panama Railroad Company, who have completed six years' continuous service on the Isthmus. The possible objects of such an organization were discussed, and a constitution was adopted, subject to final approval at a more general meeting, to which all persons eligible to membership, and who had signified an intention to join the society, should be invited. The undersigned were appointed a committee to determine on a name for the society, select a design for its emblem, solicit members, and make the necessary arrangements for the first general meeting.

"There are now approximately four hundred men on the Isthmus who are eligible for membership in the society, or will become eligible before November 1, 1911. The number will increase rapidly thereafter, and, it is estimated that before the official opening of the Canal, some fifteen hundred men will have completed six years' continuous service on the Isthmus. The majority of these men will be known to one another; they will have many common interests, and a strong motive for maintaining mutual relations in after years. The society will serve them as a means of intercommunication and friendly cooperation.

"We are sending you herewith a copy of the constitution of the society, which will explain in greater detail its aims and plan of organization. If it is your wish to be enrolled as a charter member, please sign the attached card, and return it with a remittance of three dollars—the dues for one year—to Mr. C. A. McIlvaine, treasurer *pro tem*, Culebra, C. Z.

"The time and place of the first general meeting will be announced later in THE CANAL RECORD.

"The committee would be glad to receive suggestions for a name for the society, and designs for its emblem, as well as proposals relating to any enlargement of its aims which you might consider desirable."

Very truly,

JOHN K. BAXTER, WILLIAM F. SHIPLEY, R. E. WOOD, C. A. MCILVAINE, JOHN J. MEEHAN.

CULEBRA, C. Z., August 31, 1911.

A slot machine containing sanitary drinking cups has been installed in the Commission clubhouse at Gorgona.

STEAM SHOVEL RECORDS.

Work in Central Division in August.

During the month of August, the total amount of material excavated in the Central Division was 1,464,294 cubic yards, of which 191,485 cubic yards were classified as earth, and 1,272,809 cubic yards as rock. Of this quantity, 1,442,402 cubic yards were removed by steam shovels, and contractors removed 9,972 cubic yards by sluicing, and 11,920 cubic yards by hand.

The high record for the month was made by shovel No. 256, working 27 days in the Culebra district, which excavated 64,256 cubic yards of rock.

The second best record for the month was made by shovel No. 227, working 27 days in the Culebra district, which excavated 62,627 cubic yards of rock.

The best record for a shovel of the seventy-ton class was made by shovel No. 109, working 27 days in the Culebra district, which excavated 43,573 cubic yards of rock and earth.

Shovel No. 253, working in the Empire district, made a high record for one day by excavating 3,610 cubic yards of rock on August 1.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month, and for one day, are shown below:

BEST RECORDS FOR THE MONTH.

EMPIRE DISTRICT.

Shovel No.	Cubic Yards.			
	Earth.	Rock.	Total.	No. of days at work.
232...........	....	41,832	41,832	27
221...........	....	35,436	35,436	27
253...........	....	34,388	34,388	27

CULEBRA DISTRICT.

Shovel No.	Earth.	Rock.	Total.	No. of days at work.
256...........	....	64,256	64,256	27
227...........	....	62,627	62,627	27
204...........	....	54,465	54,465	26½

PEDRO MIGUEL.

Shovel No.	Earth.	Rock.	Total.	No. of days at work.
231...........	....	20,462	20,462	17

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
253	Empire......	Aug. 1	Rock...........	3,610
203	Empire......	Aug. 7	Rock...........	2,932
232	Empire......	Aug. 21	Rock...........	2,227
256	Culebra.....	Aug. 9	Rock	3,002
227	Culebra.....	Aug. 5	Rock...........	2,785
227	Culebra.....	Aug. 9	Rock...........	2,753
231	Pedro Miguel	Aug. 10	Rock...........	1,539

Steam Shovels on Relocated Line in August.

The total excavation on the relocated line of the Panama railroad amounted to 371,076 cubic yards. Of this amount, 216,855 cubic yards were classified as borrow (75 per cent solid rock), 99,015 cubic yards as earth, 1,411 cubic yards as loose rock, and 53,795 cubic yards as solid rock.

Company forces removed 369,066 cubic yards, and 2,010 cubic yards were removed by the contractor.

Steam shovels excavated 359,363 cubic yards. Pan car task gangs took out 7,763 cubic yards, and 1,940 cubic yards were excavated for culvert foundations.

The best month's record was made by steam shovel No. 257, working in the Gatun section, which excavated 71,550 cubic yards of solid rock.

In the 70-ton class, the best month's record was made by steam shovel No. 117, working in the Monte Lirio section, which excavated 8,390 cubic yards of earth, and 25,180 cubic yards of solid rock, a total of 33,570 cubic yards.

The best day's record for shovels with 5-yard dippers was made by steam shovel No. 262, working at Monte Lirio, which excavated 3,800 cubic yards of earth and rock on August 21.

The best day's record for 70-ton shovels was made by steam shovel No. 113, working near Bas Obispo, which excavated 2,080 cubic yards of earth and rock on August 4.

Month's records are all place measurements, and day's records are car measurements. All material was loaded in 10-yard Western dump cars.

BEST RECORDS FOR THE MONTH.

Shovel No.	Location.	Cubic Yards by Cross Section.			
		Days worked.	Earth	Rock.	Total.
257	Gatun	27	....	71,550	71,550
262	M. Lirio...	27	6,400	58,330	64,730
117	M. Lirio...	27	8,390	25,180	33,570
123	Empire....	27	15,680	17,360	33,040

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
262	Monte Lirio .	Aug. 21	Earth and rock...	3,800
257	Gatun	Aug. 29	Rock............	3,380
113	Bas Obispo..	Aug. 4	Earth and rock...	2,080
266	Paraiso	Aug. 30	Earth and rock ...	2,030
121	Empire	Aug. 25	Earth and rock...	1,860
123	Empire	Aug. 15	Earth	1,860

Total steam shovel output during the month of August, 359,363 cubic yards.

Total number of steam shovel working days, 254.

Average output per working day, 1,415 cubic yards.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 69 per cent completed, 153,808 cubic yards, out of a total of 225,000, having been placed at the close of work on September 2. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
August 28...............	128	12.00	2
August 29...............	212	14.00	2
August 30...............	160	14.00	2
August 31...............	228	16.00	2
September 1...........	156	12.00	2
September 2...........	160	15.00	2
Total.................	1,044	83.00	2
Previously reported...	152,764		
Grand total...........	153,808		

Pistol Championship Match.

The Culebra Pistol Club will hold an open championship match for the Canal Zone and the United States at the range in Culebra on September 10 to 17, inclusive. The range will be open all day on September 10 and 17, and from 12 to 2 and 5 to 7 o'clock each afternoon from the 11th to the 16th, inclusive, provided contestants make arrangements beforehand. The match will be shot under the rules of the United States Revolver Association, and will be held synchronously with matches held at twenty-five different ranges in the United States. There will be five events, all at fifty yards, and with the standard American target with eight-inch bull's-eye. Match A will be fifty shots with any ammunition and revolver; B, fifty shots with any pistol and ammunition; C, seventy-five shots with a military revolver and service ammunition; D, twenty-five shots with a military revolver and service ammunition; E, twenty-five shots with any pocket revolver and service ammunition. The entry fee for events A, B, and C, will be three dollars; for event D, one dollar; for event E, two dollars. Entrants should communicate with L. D. Cornish, Culebra. Gold, silver and bronze medals will be awarded as first, second, and third prizes.

Accidents to Panama Railroad Steamships.

The *Allianca* of the Panama railroad steamship line, which left New York on August 30 for the Isthmus, was disabled off Norfolk, Va., and obliged to put back to New York until repairs could be made to the machinery. The passengers and mails were transferred to the *Oruba* of the Royal Mail line, en route to the Isthmus, which is due to arrive at Colon on Sunday, September 10. The *Allianca* will sail from New York about September 23.

In latitude 30 degrees 40 minutes north, and longitude 74 degrees 15 minutes west, on August 26, the Panama railroad steamship *Colon*, on its voyage from New York to Cristobal, encountered an ordinary southeast gale, during which a sea was shipped forward that damaged the forward end of the dining saloon, broke a "strong back" at hatch No. 1, and washed away the ship's bell and a section of rail on the upper deck. Necessary repairs were made before the *Colon* left the Isthmus on the return voyage.

Visit of National Bankers' Association.

The excursion of the National Bankers' Association of the United States to the Canal Zone will be made in the three new steamships now building at Belfast for the United Fruit Company, the *Peralta*, *Sixola*, and *La Señora*. They will sail from New Orleans on November 25 at noon, and will arrive at Colon on the morning of November 30. The return trip will be made from Colon on December 2 While on the Isthmus the party will be in charge of the United Fruit Company, whose guides will conduct the members over the Canal work, and through the city of Panama.

Population of Panama and Colon.

A careful census has been taken of the cities of Panama and Colon by the Government of Panama, in connection with the national census now being concluded. The results are furnished the Commission by the Secretary of Foreign Affairs of the Republic, tabulated, as follows:

Sex.	Race or Family.					
	White	Mestizos	Negroes	Amarillos (Yellow)	Indians	Total
City of Panama.						
Male....	3,611	7,273	6,196	1,133	......	18,213
Female..	3,397	8,964	4,767	27	......	17,155
Total..	7,008	16,237	10,963	1,160	......	35,368
City of Colon.						
Male....	1,516	1,923	5,555	527	99	9,620
Female..	1,099	2,484	4,452	92	1	8,128
Total..	2,615	4,407	10,007	619	100	17,748

CANAL ZONE AGRICULTURE.

Abstract of Report By Agricultural Experts.

The experts detailed by the Department of Agriculture to make an investigation into the agricultural possibilities of the Canal Zone, have made a report, which will be published by the department as one of its series of bulletins, and may be procured upon application to the Secretary of Agriculture, Washington. The investigation was conducted by Wm. A. Taylor, pomologist, and Hugh H. Bennett, scientist in soil survey, assisted in the field by H. F. Schultz, who, during the period of the survey—the winter of 1909–10—was in charge of the experimental gardens maintained by the Commission. The report is in two parts—(1) Reconnaissance agricultural survey, and (2) The outlook for agriculture in the Canal Zone.

The conclusions, with regard to agricultural possibilities, are, as follows:

> Large farming operations are impracticable in the Canal Zone on account of the broken topography. Small farms, operated by the proprietors, or under a central directive management, through which crop rotation and handling could be systematized and controlled, constitute the probable course of best agricultural development, especially where valuable, perishable products, destined for shipment outside the Canal Zone are concerned, such as choice mangoes, avocadoes, pineapples, mangosteens, chayotes, and other tropical fruits and vegetables which are apparently well adapted to conditions in the Zone. The staple crops best adapted to the conditions appear to be corn, cassava, yams of several species, sugar cane, plantains, bananas, and upland rice, with a large number of other tropical and subtropical crops of less importance in the Zone, including cocoa, coffee, and rubber.

The methods practiced are most primitive and transient, and little effort appears to have been devoted to selecting and developing desirable types, which alone can create an efficient and profitable agriculture The total crop production of the Zone at present is, in consequence, very small, and the products in general are of low quality, and incapable of maintaining other than very primitive standards of life. The occurrence of occasional choice strains, and individual trees and plants of superior excellence, indicates that great improvement in productiveness and quality of most of the products could be promptly secured by well directed, systematic plant introduction, and plant improvement work.

The most promising line of attack upon the agricultural problem of the Canal Zone will apparently be to develop a permanent mixed tropical agriculture, with a distinct horticultural trend, in which hand labor of tropical origin will be the main dependence for tillage. In this way, the existing and prospective conditions would favor the production of high priced products requiring regular and frequent transportation service, such as will doubtless be available promptly after the opening of the Canal for use. One important feature should be the early working out of a method of mixed cropping, in which soil maintaining and improving leguminous intercrops can be continuously used to replace the wild and intractable native vegetation of the present shack-farm agriculture.

To quickly and effectively develop such a method will doubtless require some intelligently directed experimental work, as it involves careful study of the whole question of plant relationships and antagonisms, one of the most important and far reaching problems in tropical agriculture, as well as the control of injurious insects and plant diseases. To meet the obvious needs, the following lines of work are suggested:

(1) A careful study of the existing cultivated types of crop plants of the Canal Zone, and the adjacent territory of the Republic of Panama, with the view to locating and perpetuating the better strains of such staple crops as have already demonstrated their adaptability to the conditions.

(2) Systematic introduction of promising types and varieties from other tropical countries, with a view to securing the best and most valuable varieties and strains that have been developed under similar conditions elsewhere. This feature is of special importance in the Canal Zone, because of the backwardness of the agricultural industry at the present time.

(3) The adjustment of some northern types of vegetables, and other perishable crops, to tropical conditions by selection and breeding. This will probably be a slow and tedious undertaking, but the fact that the maintenance of the Canal will probably necessitate the continuous presence of a considerable population of northern birth and tastes, who are not likely to be quickly or easily reconciled to tropical vegetable products, renders it well worth while to undertake.

(4) The development of more economical, effective, and permanent methods of farming, including contouring, tillage, crop rotation, and other points essential to the conservation of the soil and the maintenance of soil fertility. Special attention should be given to the introduction and establishment of crops needed for maintaining and encouraging the dairying and poultry industries, and to the establishment of these industries on a stable economic basis.

(5) The production of useful timber on lands not suitable for general agriculture, including such trees as the various species of eucalyptus, teak etc.

Canal Medals.

Seven hundred and twenty-six Canal medals, earned by Canal and railroad employes up to January 1, 1911, have been distributed on the Isthmus. The service bars are being engraved, and will be distributed within a month or six weeks.

Fund for Relief of Mrs. L. R. Dennis.

The following statement is published for the information of the Canal Zone people who contributed to the relief of the wife and children of the late L. R Dennis:

RECEIPTS.

Public subscription at Gatun	$598.25
Public subscription at Empire	440.52
Entertainment at Gatun	300.35
Canal Zone Red Cross	30.00
Knights of Pythias at Ancon	100.00
Knights of Pythias at Culebra	50.00
Knights of Pythias at Empire	50.00
Knights of Pythias at Las Cascadas	50.00
Knights of Pythias at Gorgona	50.00
Knights of Pythias at Cristobal	10.00
Pythian Sisters	15.00
Total	$1,694.12

DISPOSITION.

Sent to Mr. W. W. Warwick, August 25, 1911	$1,374.62
Postal money order in Mrs. Dennis' possession when she sailed	65.00
Cash in Mrs. Dennis' possession when she sailed	59.00
Other cash paid Mrs. Dennis	90.00
Hospital expenses of Mrs. Dennis, and other items	66.69
Balance in hands of treasurer, and to be collected	38.81
Total	$1,694.12

Mrs. Dennis and her six children were cared for by the Red Cross while in the Canal Zone; free transportation to the States was furnished them, and arrangements were made to have them cared for in Washington, until such time as Mrs. Dennis can procure a position. She was recommended to the superintendent of the State, War, and Navy building in Washington for a position as chorewoman. Her preference was to reside near Washington, and to that end, W. W Warwick and Ernest Daniels, the latter a Washington real estate man, have been appointed trustees for the purpose of investing about $1,200 in a house near Washington to be used by the family, but not to be sold until the youngest child is 18 years of age. Fifty dollars will be paid to Mrs. Dennis for the ensuing two months, and any balance remaining after the purchase of the house, will also be paid to her.

PERSONAL.

Mr. W. G. Comber left on the *Colon* on Tuesday, September 5, on his annual leave of absence in the States.

Public Installation by Ancon Kangaroos.

A public installation and dance was held by Ancon Court. No. 7, I. O. P. K. at Ancon hall on Saturday evening, August 26. The officers installed were: Judge, George H. Vogan, prosecuting attorney, X. D. Holt; defendant attorney, G. L. Griley; comptroller, H. H. Hammer; chaplain, A. S. Curtis; sheriff, Michael Dew. During the ceremony, music was furnished by an orchestra, and Miss McDonald sang two selections, accompanied by Mrs. Wallace on the piano. Refreshments were served.

United Spanish War Veterans.

A meeting of the United Spanish War Veterans will be held in the lodge hall at Culebra on September 10 at 2.30 p. m., when the camp charter will be opened.

On Saturday evening, September 9, the United Spanish War Veterans will give an entertainment and dance at the clubhouse in Gatun. The public is invited, especially those who have seen service in the army or navy.

Annual Meeting of Tivoli Club.

At the annual meeting of the Tivoli Club on August 27, the following officers were elected for the ensuing year: President, Dr. J. C. Perry; first vice-president, Col. J. P. Fyffe; second vice-president, Alban G. Snyder; secretary and treasurer, J. W. Tannehill; board of governors include the officers Tom M. Cooke, and A. S. Zinn. The membership committee consists of H. S. Hunter and W. K. Jackson. The report of the secretary and treasurer shows a cash balance of $1,497.47.

U. F. Co.'s Coastwise Service to be Resumed.

The coastwise service of the United Fruit Company between New Orleans and Colon, will be resumed with the sailing of the *Parismina* from New Orleans on Wednesday, September 13, and the sailing of the *Cartago* from Colon on Thursday, September 14. These ships stop on both outward and inward bound trips at Port Limon, Costa Rica, and Puerto Barrios, Guatemala.

W. G. Russell and James A. Daly, the highest bidders, have been awarded the contract for soliciting baggage on Panama railroad trains, and at stations, and for handling it at the terminals.

OILS AND GREASES.

Kind Used, Manner of Receiving and Distributing, Consumption and Use.

The number of lubricating, illuminating, and miscellaneous oils and greases received and standardized by the Commission and Panama railroad is 21, of which 10 are lubricating, two illuminating, four miscellaneous oils; and five are greases, including nonliquid oil.

Lubricants and oils are standardized, as follows: Valve, air compressor cylinder, marine, stationary, locomotive, turbine, and gas engine oils, crank case, car, transformer, lard, ammonia cylinder, and crude oil. Greases—nonliquid oil, cup, gear, cable, and crank pin grease. Illuminating—signal and kerosene oils. Gasoline.

Of the above mentioned oils, 12 are received by the Commission in 50-gallon steel drums, and three in cases of two 5-gallon cans each. Three kinds of greases are received in barrels, and two in 25-pound cans. Crude oil is supplied to the different points in containers convenient for the work required, drawn from crude oil tanks located on the Isthmus.

The approximate monthly consumption and use of each grade by the Commission and the Panama railroad is, as follows:

Valve oil, 5,350 gallons—For the internal lubrication of all steam valves and cylinders.

Air compressor cylinder oil, 150 gallons—For the internal lubrication of air cylinders of all compressors, pneumatic hammers, and drills.

Marine engine oil, 4,175 gallons—For use on marine engines and block bearings of suction dredges.

Stationary engine oil, 2,750 gallons—For the general lubrication of stationary engines and machinery, electric motors, and dynamos.

Locomotive engine oil, 3,850 gallons—For all locomotives, running gears of locomotive cranes, deck machinery of dredges, and for cold saws in machine shops.

Turbine engine oil, 400 gallons—For the step bearings of turbine engines in electric plants.

Gas engine oil, 150 gallons—For the cylinders of internal combustion engines.

Crank case oil, 100 gallons—For use in crank cases of Westinghouse vertical compound engines.

Car oil, 5,175 gallons—For the journals of rolling stock generally, steam shovel bearings, tripod drills, etc.

Transformer oil, 200 gallons—For use by the electrical divisions in oil-cooled transformers.

Lard oil, 50 gallons—Miscellaneous use.

Ammonia cylinder oil, 50 gallons—For the internal lubrication of cylinders of ammonia compressors.

Crude oil, 1,000 gallons—Used for the lubrication of steam shovel chains, and special designated uses.

Kerosene oil, 10,000 gallons—For illuminating and cleaning purposes.

Signal oil, 100 gallons—Used in railroad lanterns and cab lights of engines.

Gasoline, 3,350 gallons—For use on motor cars, launches, blow torches, cleaning, etc.

Nonliquid oil, 1,850 pounds—Used on Gatun cableways and air cylinders.

Cup grease, 6,000 pounds—For use in compression cups.

Gear grease, 6,175 pounds—For use on gears, center and side bearings, etc.

Cable grease, 1,000 pounds—Used on the Gatun cableways.

Crank pin grease, 40 pounds—For use on locomotive crank pins, equipped for the use of grease.

The various equipment on which the above oils and greases are used is, as follows:

Canal equipment—		
Steam shovels		100
Locomotives		385
Cars		5,880
Drills		560
Cranes		58
Unloaders		30
Spreaders		25
Track shifters		10
Pile drivers		20
Floating equipment—		
Dredges		20
Tugs		14
Clapets		11
Barges, lighters, and scows		83
Launches		14
Cutters		3
Pile drivers		2
Tow boat		1
Crane boat		1
Drill boats		2
Rock breaker		1
Plant equipment—		
Electric power plants		7
Hydraulic plant		1
Air compressor plants		3
Shops (machine and power)		9
Industrial railway:		
Locomotives, electric	8	
Cars	16	
		24
Automatic railway cars		45
Coal hoist		1
Cantilever cranes		5
Berm cranes		4
Cableways (Gatun), 6 double and 1 single		7
Rock crushers		2
Cold storage plant		1
Laundries		2
Bakery		1
Municipal pumping and condensing plants		15

Miscellaneous equipment—

Such as moter cars, road rollers, trucks, emergency steam, electric, and air pumps used in construction, relay pumps, emergency pumping stations, channellers, lighthouses, houseboats, and outlying points are supplied with illuminating oils.

Method of handling—All lubricants and oils are received at the general storehouse located at Mount Hope, and are distributed from there to the various division storehouses, including the Panama railroad and outlying depots to the number of 10, from which points they are supplied to the local oil houses, situated at places convenient to the work, whence they are issued in daily, weekly, and monthly quantities, as requisitioned on oil tickets, by employes in charge of the equipment or plant. Oils are delivered to the local oil houses in 50-gallon drums, which are used as distributors by the insertion of a faucet, and have a value to the Commission when returned to the contractor in good order.

All oiling equipment of the Commission and Panama railroad is standardized, as follows: Twenty-four-inch spring hand oilers, locomotive tallow pots, spring stationary engine oiler, squirt can, oil cans with screw covers and spout, of one, two, and five-gallon capacity.

All equipment and plants of the Commission and Panama railroad are placed on a monthly allowance, according to the particular necessities and nature of work performed by each. A monthly report is required of the consumption of each individual piece of equipment and plant, which shows service days, and a satisfactory explanation of amounts used in excess of the monthly allowance must be made. Monthly reports are posted at different places for the information of all concerned. All equipment and plants are furnished with standard oiling equipment and kept in good repair, and are supplied also with containers for oil drawn for future use.

Oiling systems and drip pans are installed where required, and where sufficient quantities of oils can be reclaimed, filters are furnished. When the reclaiming of oils through drip pans is not sufficient to warrant the installation of a filter, oil is filtered at a central station for reuse. Careful attention is given to every detail of the work in regard to the issuing, handling, and consumption of lubricants and oils, and instructions have been issued with reference to economical use

Pilots, Mates, Masters, Chauffeurs.

Examinations for pilots, mates, and masters; and for chauffeurs, will be held by the Board of Local Inspectors at Ancon on September 13.

LOST—In the streets of Colon, on the evening of September 1, a ribbon watch fob bearing Canal medal, double Elk emblem, silver mounting. Canal medal No. 3,382. Reward, if returned to post-office, Cristobal.

SOCIAL LIFE OF THE ZONE.

Church Work.

St. James' Protestant Episcopal church at Empire was dedicated on Sunday afternoon, August 20. The dedicatory service was read by the general missionary and the Rev. Jesse R. Bicknell preached the sermon. Special music was rendered by the choir. A small grant was made by the Church Missions building fund for the building, and the remainder was raised by the congregation. The building is completed, furnished, and paid for. The parish is a large one, extending through old and new Empire, Golden Green, and the neighboring native villages.

The altar society of the Roman Catholic church at Gorgona has discontinued its meetings until the first of October. During the past year, the society has maintained the organist at a weekly salary, taken charge of the cleaning of the church, purchased ornaments, and installed a lavatory in the building. The parish dates from the French occupation. The building was used by the Commission for a storehouse until, in response to a petition of the Roman Catholic residents of Gorgona, it was assigned for church services. Since that time, two years ago, it has been renovated, and is maintained by the congregation. In connection with the church, there is a small Sunday school of American children. In September, there will be confirmation in the church, when the Bishop of Panama will officiate.

Social Events.

The regular dances of the Las Cascadas club are held in the lodge hall on the second and fourth Thursday evenings in each month. Informal dances are held on the first and third Thursday evenings.

The Las Cascadas Euchre Club meets fortnightly on Tuesday afternoons at the homes of members. One evening in each month an informal card party and dance is held, when the husbands and friends of the members are invited.

The Canal Zone Chapter, Royal Arch Masons, held a dance and banquet in the Commission hotel at Las Cascadas on Saturday evening, August 19, in honor of their first anniversary. A special train brought members and their families from Paraiso and intermediate stations. Following the dance, which was held in the social hall, a banquet was served in the hotel dining room. Covers were laid for 150. The only chapter of Royal Arch Masons in Panama was organized at Las Cascadas on July 23, 1910, under a charter granted by the General Grand Chapter of Royal Arch Masons of the United States of America.

Girls' Sewing Club.

A girls' sewing club has been organized in Gorgona. The meetings will be held weekly on Friday afternoons at the homes of the members. The girls will learn plain sewing, hemming, stitching, and embroidery, under a directress. The initial meeting was held on Friday afternoon, September 1, at the home of Mrs. S. E Calvit.

Sons of Veterans.

All those desiring to become charter members of the Sons of Veterans of the war of 1861-65 are requested to send their names to Past Camp Commander C. M. Fairbanks, Tabernilla, who has an application for a camp charter.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The moving picture schedule for the week of September 11 to 16, follows: Monday night, Gorgona; Tuesday, Gatun; Wednesday, Cristobal; Thursday Culebra: Friday, Corozal; Saturday, Empire

CULEBRA.

The monthly high score in duckpins was made by Mr. Huttlemaier, 124. Mr. Driscoll won the high score in bigpins, 247.

The Hearons Sisters will give a return concert on Sunday evening, September 10, which will be open to the public.

The volleybal' tournament, with five teams entered; opened on Tuesday night, September 5. The Quartermaster's team played the Married Men. The Independents will meet the All Stars on Friday evening at 8 o'clock

The Cristobal bowling team took three games from Culebra on the home alleys on Saturday evening. September 2.

EMPIRE.

The following high scores were bowled during the past week: Duckpins—Pinney, 101, 101; Pulsifer, 106, 101; Coombs, 102; Dakin, 100, 122; McLeod, 102; Scull, 125. Tenpins—Anderson, 216; Davis, 205.

The league game bowled on the Empire alleys on Saturday, September 2, resulted in Empire winning three straight games. The scores were, as follows:

Empire.				Gatun.			
Parkis	167	193	214	Louner	125	144	157
Sawtelle	146	179	134	O'Meara	191	204	144
Drake	141	146	154	Chamberlain	136	146	147
Goolsby	168	147	136	Galloway	142	155	122
Giavelli	200	166	206	Barte	160	145	136
Total	822	831	844		754	794	706

The subject for discussion by the literary society for September 8 will be "The initiative, referendum, and recall."

GORGONA.

The Gorgona Health League met on Tuesday evening, August 29, and discussed eugenics, or race improvement as outlined in the hook on that subject recently sent out by the health league. The discussion was led by Mr. Swanson. This is the first of a series of discussions to be given under the auspices of the health league.

Thirty-five men have been enrolled in the gymnasium class. Apparatus work has been taken up, and will be continued for the remainder of the season.

The Hearons Sisters Concert Company will fill a return engagement on Saturday night, September 9.

The Gorgona boy scouts walked to Tabernilla on Sunday, August 22, and took an exploring trip from there. They found the lake near that place, and selected a camping site to be used at some future time.

The Isthmian bowling league series was opened on Saturday, September 2, with Gorgona at Camp Elliott, and Camp Elliott at Gorgona. The home team won three straight games at Camp Elliott. The scores at Gorgona were, as follows:

	1st game.	2nd game.	3d game.
Gorgona	776	785	737
Camp Elliott	751	757	768

GATUN.

The health league was organized on Tuesday night. Mr. Fomon was elected president, and Mr. Fitzpatrick, secretary.

Messrs. Weston and Glick of Cristobal furnished vocal and piano music at the moving picture show on Friday night.

There were 2,093 games bowled on the Gatun alleys during August. Twenty men rolled over 100 in duckpins. DePoorter and Wurster tied for high score in duckpins—score, 121. Wurster won the tie. Louner and Hodges tied in tenpins.

On September 11, two-men "ragtime" tournaments will be started in duck and tenpins. Prizes will be given the winners.

Gatun won two out of three games in the bowling league series with the Empire team at Gatun on Saturday, September 2. Scores, as follows:

Gatun	903	805	887
Empire	789	915	829

CRISTOBAL.

The standing of the teams in the bowling league tournament is, as follows:

	Won.	Lost	P. C.
Cristobal	6	0	1,000
Empire	4	2	666
Marines	4	2	666
Gorgona	2	4	333
Gatun	2	4	333
Culebra	0	6	000

On Wednesday night, August 27, at the meeting of the debating club, the question was "Resolved, that United States senators should be elected by direct vote of the people." The affirmative won. Attendance, 93.

Basketball practice will take place every Tuesday night. Volleyball will be played every Tuesday and Thursday afternoons at 5.30 o'clock. Regular gymnasium classes will be held on Monday and Thursday of each week at 7.45 p. m.

On Monday night there was a wrestling match in the gymnasium between Messrs. Walker and Antonio, the latter winning two falls in 8½ and 5 minutes, respectively.

Seventeen boys went on the outing to Old Panama on Labor Day.

Married.

CLARK-WILSON—At St. Luke's chapel in Ancon, on September 2, the Rev. J. R. Bicknell officiating, Jessie Sanderson, daughter of Mrs. Mary Sanderson Wilson of Norfolk county, Va., to Herbert C. Clark, M. D., of Philadelphia, Pa. Canal Zone residence, Ancon.

GIBSON-SEYMOUR—At Cristobal, on August 31, Edith M. Seymour of Petoskey, Mich., to Dr. William C. Gibson of Empire, the Rev. A. A. Nellis officiating. Canal Zone residence, Empire.

Rainfall from August 1 to 31, 1911, Inclusive.

Stations.	Maximum in one day.	Date.	Total for period.
Pacific Section—	Ins.		Ins.
Ancon	1.94	12	7.21
Balboa	2.49	12	8.50
*Miraflores	2.30	20	7.06
Pedro Miguel	1.15	9	5.43
Rio Grande	2.13	2	8.17
Central Section—			
Culebra	2.47	21	8.36
*Camacho	1.64	21	7.98
Empire	1.96	21	5.98
Gamboa	0.85	25	7.68
*Juan Mina	3.20	31	12.88
Alhajuela	1.29	21	10.79
*El Vigia	1.49	19	12.56
*Gorgona	1.05	2	8.51
San Pablo	1.70	25	7.21
Tabernilla	2.13	15	8.40
Bohio	1.05	25	5.69
*Trinidad	1.34	15	8.17
*Monte Lirio	2.11	15	9.58
Atlantic Section—			
Gatun	2.19	20	7.91
*Brazos Brook	4.25	14	12.19
Cristobal	4.27	14	11.60
Porto Bello	4.27	13	22.56
*Nombre de Dios	2.31	20	11.70

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, September 2, 1911. All heights are in feet above mean sea level.

Day and Date.	Station.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Aug. 27	127.5	93.7	47.6	16.0	15.8
Mon., Aug. 28	127.2	93.7	46.8	15.8	15.6
Tues., Aug. 29	128.2	94.2	47.2	15.6	15.4
Wed., Aug. 30	126.6	93.2	46.4	15.6	15.3
Thurs., Aug. 31	126.6	93.0	48.2	15.3	15.2
Fri., Sept. 1	129.4	95.1	48.4	15.8	15.2
Sat., Sept. 2	126.8	93.6	48.0	15.8	15.4
Height of low water	125.0	92.0	44.0		

OFFICIAL CIRCULARS.

Disbursing Officer.

CULEBRA, C. Z., August 29, 1911.

CIRCULAR No. 406:

The duties of Disbursing Officer on the Isthmus will be assumed by Mr. William M. Wood on September 1, 1911, to serve in that capacity during the absence of Mr. Edward J. Williams, on leave.

GEO. W. GOETHALS, *Chairman.*

Surcharge on Material and Labor at Marine Camp.

CULEBRA, C. Z., September 1, 1911.

CIRCULAR No. 169-J:

Effective this date, the same surcharge will apply on material and labor furnished the Marine Battalion at Camp Elliott as on material and labor furnished to divisions and departments of the Isthmian Canal Commission.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Collector of Revenues.

ANCON, C. Z., August 21, 1911.

I have the honor to designate Mr. Arthur McGown, Deputy Collector of Revenues, as Acting Collector of Revenues during my absence in the States on leave, effective August 24, and request your approval of the same.

Very respectfully,
TOM M. COOKE, *Collector of Revenues.*

APPROVED: M. H. THATCHER,
Head of Department of Civil Administration.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at the Hotel Tivoli, Ancon, C. Z., on Sunday, September 10, 1911, at 7.30 p. m. The program follows:

1. March—*Unter den Siegesbanner*.......Von Blon
2. Selection—*The Spring Maid*......... Reinhardt
3. Romance—*A Tale of Two Hearts*......Roberts
4. Overture—*Morning, Noon, and Night in Vienna*..Suppe
5. Waltz—*Casino Tanze*..............Gung'l
6. (*a*)—*Chicken Reel*..............Daly
   (*b*)—*Casey Jones*..............Newton
7. Flower song—*Sweet Summer Rose*.....Armand
8. Popular medley—*Remick's Hits*.........Lampe
9. March—*Napoleon's Last Charge*...........Paul

CHAS. E. JENNINGS, *Musical Director.*

The next concert will be given at Gorgona, C. Z., September 17, at 6 p. m.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending September 13, 1911 (75th meridian time):

Date.	Low.	High.	Low.	High.	Low.
	A.M.	A.M.	A.M.	P.M.	P.M.
September 7		2 58	9.08	3.10	9.23
September 8		3.30	9.45	3.47	10.00
September 9		4 05	10.20	4.20	10.37
September 10		4.40	10.57	5.00	11.12
September 11		5.15	11.33	5.35	11.50
			P.M.		
September 12		5.50	12.10	6.10	
September 13	12.27	6.30	12.50	6.50	

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending September 2, follows:

Date.	Hours worked.	Cubic Yards.
August 28	4.25	1,746
August 29	6.03	2,163
August 30	4.23	1,621
August 31	5.27	1,974
September 1	4.48	1,888
September 2	4.25	1,667
Total	29.31	11,059

WEATHER CONDITIONS, CANAL ZONE, AUGUST, 1911.

Stations.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.	Date.		Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Cristobal	29.825	79.8	86	24	73	12	88	11.60	15.13	27	6,405	W.	28	W.	9
Culebra	29.816	79.8	91	7	70	12	93	8.36	10.46	27	4,759	N.W.	38	N.E.	18
Ancon	29.806	80.6	92	7	70	12	92	7.21	7.61	19	4,880	N.W.	19	N.	18

COMMISSARY DEPARTMENT.

The open hours at Culebra commissary are from 8 a. m. to 1 p. m., and from 3 p. m. to 7 p. m. All other commissaries are open from 8 a. m. to 1 p. m. and 3 p. m. to 7 p. m., with the exception of the Cristobal commissary, which is open from 8 a. m. to 12.30 p. m., and from 2 p. m. to 7 p. m.

Retail prices of cold storage provisions for the week beginning September 2.

FRESH MEATS.

	Price.
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	†18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24

MISCELLANEOUS.

Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lleberwurst, per pound	10
Devonshire Farm	17
Sweetbread—Veal, per pound	1.20
Beef, per pound	25
Eggs, fresh, dozen	28
one-half dozen only	15
Bluefish, fresh, per pound	14
Halibut, fresh, per pound	15
Shads, fresh, each	70
Shad roes, fresh, per pair	35

POULTRY AND GAME.

Chickens—Fancy roasting, milk fed, large, each	1.25
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each 60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.00
Broilers, milk fed, each	60
corn fed, each	55
Turkeys, per pound	26
Squabs, each	35
Capons, each	2.10
Fryers, corn fed, each	60
Partridges, each	50
Grouse, each	50

CURED AND PICKLED MEATS.

Ham—German, Westphalia, per pound	36
Sugar cured, per pound	18
Sliced, per pound	20
Half, for boiling, per pound	19
Boiled, per pound	26
Hocks, per pound	‡8
Bacon—Breakfast, whole piece, per pound	22
Breakfast, sliced, per pound	23
Pork, salt family, per pound	*13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30

DAIRY PRODUCTS.

	Price.
Butter—Creamery special, per pound	32
Cheese—Roquefort, per pound	38
Philadelphia cream, cake	18
Young America, per pound	18
Swiss, per pound	26
Edam, each	1.00
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**25
Buttermilk, bottle	**15
Ice cream, quart	‡25
½-gallon	‡50

VEGETABLES AND FRUITS.

Beets, per pound	*3
Celery, per head	6
Corn, green, per doz	24
Cabbage, per pound	*3
Cucumbers, per pound	3
Carrots, per pound	*4
Cauliflower, per pound	13
Lettuce, per pound	†12
Onions, per pound	*3½
Potatoes, white, per pound	*4
sweet, per pound	2
Pears, alligator, each	6
Peppers, green, per pound	7
Rhubarb, per pound	3
Turnips, per pound	4
Tomatoes, per pound	*4
Yams, per pound	3
Apples, per pound	10
Cantaloupes, each	8
Grapes, per pound	7
Lemons, dozen	24
Limes, per 100	80
Oranges, California, per dozen	42
Pears, per pound	8
Peaches, pound	*6
Plums, per pound	9
Watermelons, each	30

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending September 2:

Venus, August 27, from Gulfport, with 10,544 pieces lumber for stock; 554 pieces piling for Atlantic Division.

Etonian, August 27, from Liverpool, with 200 barrels carbolic acid for stock.

Trent, August 27, from New York, with 13 bundles turnbuckles for stock.

Kansas City, August 28, from San Francisco, with 1,195 pieces redwood lumber and 650 pieces white oak lumber for Mechanical Division.

Atenas, August 31, from New Orleans, with 11 packages rock crusher parts and 230 pieces ties for Pacific Division; 48 bundles washers and 74 pieces piling for Atlantic Division; 198 pieces white oak lumber and 1,345 bundles siding lumber for Mechanical Division; 2,033 pieces yellow pine lumber, 308 bundles ceiling lumber, 1,573 bales hay, 2,728 sacks oats, 510 sacks bran, for stock.

Colon, September 1, from New York, with 10 pieces castings for Atlantic Division; 19 cases rubber boots and 92 bundles steel bars for Pacific Division; 6 cases steel, 5 cases copper wire, 14 barrels journal bearings, for Mechanical Division; 6 barrels crockery, 7 cases air hose and couplings, 18 barrels chipped soap, 10 cases envelopes, 40 pigs tin, for stock; and a miscellaneous cargo, the whole consisting of 282 packages, weighing 50 tons.

Almirante, September 1, from New York, with 88 barrels fire sand for Mechanical Division; 24 bales oakum for stock.

Misdirected Letters.

ANCON, C. Z., September 6, 1911.

The following insufficiently addressed letters, originating in the United States and its possesssion, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Bean, Mrs. E. C.
Briggs, Ray
Browning, Robert F.
Brozile, Mrs. D. A.
Buchanan, Jonathan
Campbell, Capt. Otis F.
Du Maine, Alphonse (2)
Emery, Mrs. Mary
Hamilton, J. I.
Hayse, Dr. Harry
Klunk, Mrs. Charles
Lenerett, Hugh
Lewis, Lewis
Martin, Bernard
McKnight, John
Nelson, Elliott
Orza, Manuel
Peterson, G. C. (2dclass)
Ray, J. R.
Reese, Dr. Frederick
Rielley, H. I.
Robertson, Earnest
Spencer, Henry
Thompson, J. M.
Vreeland, W. K.

The following vessels arrived at, or departed from the port of Balboa during the week ending September 2:

Arrivals—August 28, *Kansas City*, from San Francisco; *Ucayali*, from Callao; August 29, *Ecuador*, from Guayaquil; August 30, *Chile*, from Guayaquil; *Aysen*, from Valparaiso; August 31, *Newport*, from San Francisco; September 2, *Pleiades*, from San Francisco.

Departures—August 28, *Oberon*, to Port Harford; *Guatemala*, to Callao; August 29, *Peru*, to Guayaquil; August 31, *Mackinaw*, to San Francisco.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line; the Panama Railroad Company's dates being subject to change.

NEW YORK TO CRISTOBAL.

Panama	P. R. R.	Tuesday	Sept. 5
Advance	P. R. R.	Monday	Sept. 11
Colon	P. R. R.	Monday	Sept. 18
Allianca	P. R. R.	Saturday	Sept. 23
Panama	P. R. R.	Friday	Sept. 29
Advance	P. R. R.	Thursday	Oct. 5
Colon	P. R. R.	Thursday	Oct. 12
Allianca	P. R. R.	Wednesday	Oct. 18
Panama	P. R. R.	Tuesday	Oct. 24
Advance	P. R. R.	Monday	Oct. 30

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Sunday	Sept. 17
Advance	P. R. R.	Saturday	Sept. 23
Colon	P. R. R.	Saturday	Sept. 30
Allianca	P. R. R.	Friday	Oct. 6
Panama	P. R. R.	Thursday	Oct. 12
Advance	P. R. R.	Tuesday	Oct. 17
Colon	P. R. R.	Tuesday	Oct. 24
Allianca	P. R. R.	Monday	Oct. 30
Panama	P. R. R.	Sunday	Nov. 5
Advance	P. R. R.	Saturday	Nov. 11

NEW YORK TO COLON.

Santa Marta	U. F. C.	Thursday	Aug. 31
Prinz Sigismund	H.-A.	Friday	Sept. 1
Oruba	R. M.	Saturday	Sept. 2
Metapan	U. F. C.	Thursday	Sept. 7
Prinz Joachim	H.-A.	Saturday	Sept. 9
Zacapa	U. F. C.	Thursday	Sept. 14
Prinz Eitel Friedrich	H.-A.	Friday	Sept. 15
Magdalena	R. M.	Saturday	Sept. 16
Almirante	U. F. C.	Thursday	Sept. 21
Prinz Aug. Wilhelm	H.-A.	Saturday	Sept. 23
Santa Marta	U. F. C.	Thursday	Sept. 28
Prinz Sigismund	H.-A.	Friday	Sept. 29
Clyde	R.M.	Saturday	Sept. 30
Metapan	U. F. C.	Thursday	Oct. 5
Prinz Eitel Friedrich	H.-A.	Saturday	Oct. 7
Atrato	R.M	Saturday	Oct. 14

COLON TO NEW YORK.

Almirante	U. F. C.	Thursday	Sept. 7
Prinz Aug. Wilhelm	H.-A.	Tuesday	Sept. 12
Santa Marta	U. F. C.	Thursday	Sept. 14
Prinz Sigismund	H.-A.	Saturday	Sept. 16
Clyde	R.M	Tuesday	Sept. 19
Metapan	U. F. C.	Thursday	Sept. 21
Prinz Joachim	H.-A.	Tuesday	Sept. 26
Zacapa	U. F. C.	Thursday	Sept. 28
Prinz Eitel Friedrich	H. A.	Saturday	Sept. 30
Atrato	R. M.	Tuesday	Oct. 3
Almirante	U. F. C.	Thursday	Oct. 5
Prinz Aug. Wilhelm	H.-A.	Tuesday	Oct. 10
Thames	R.M	Tuesday	Oct. 17

NEW ORLEANS TO COLON.

Turrialba	U. F. C.	Saturday	Sept. 2
Abangarez	U. F. C.	Saturday	Sept. 9
Parismina	U. F. C.	Wednesday	Sept. 13
Atenas	U. F. C.	Saturday	Sept. 16
Heredia	U. F. C.	Wednesday	Sept. 20
Turrialba	U. F. C.	Saturday	Sept. 23
Abangarez	U. F. C.	Saturday	Sept 30
Parismina	U. F. C.	Wednesday	Oct. 4
Atenas	U. F. C.	Saturday	Oct. 7

COLON TO NEW ORLEANS.

Atenas	U. F. C.	Thursday	Sept. 7
Turrialba	U. F. C.	Thursday	Sept. 14
Cartago	U. F. C.	Thursday	Sept. 14
Parismina	U. F. C.	Thursday	Sept. 21
Abangarez	U. F. C.	Thursday	Sept. 21
Heredia	U. F. C.	Thursday	Sept. 28
Atenas	U. F. C.	Thursday	Sept. 28
Cartago	U. F. C.	Thursday	Oct. 5
Turrialba	U. F. C.	Thursday	Oct. 5
Parismina	U. F. C.	Thursday	Oct. 12

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct leave on Thursdays at 3 p. m.; ships for New Orleans in the coastwise service on Thursdays at 4 p.m.; ships for New York via Kingston on Thursdays at 11 a. m.: for Bocas del Toro on Mondays at 6 p. m

The Leyland line steamer *Louisianian* sails for New Orleans direct on or about September 28.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, SEPTEMBER 13, 1911. No. 3.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Unloading Dock for Dynamite at Mindi.

A wharf, 130 feet long and 20 feet wide, will be built along the old French canal at Mindi, near the crossing of the American Canal, at which dynamite ships will tie up for unloading. Up to the present time, dynamite ships have unloaded at the only available place, the docks at Mount Hope, and although no accidents have occurred since the first shipment arrived in 1904, there is always danger of an explosion which might wreck the shipping in the harbor, and do considerable damage in Colon and Cristobal. The point at which the new dock will be constructed is about two miles north of Gatun, and four miles south of Cristobal, and an explosion at this point would. therefore, do less damage. It will be necessary to dredge about 27,000 cubic yards of material in the old French canal as an approach to the dock. Ships containing dynamite will pass up the American Canal direct to the new dock. The railroad already in use in hauling spoil from the excavation pit at Mindi will be available for the dynamite trains. It is estimated that about 15,000,000 pounds of dynamite remain to be unloaded before the Canal is completed.

Canal Work in August.

The grand total of Canal excavation to September 1 was 148,192,759 cubic yards, leaving to be excavated 47,130,620 cubic yards, or less than one-fourth of the entire amount for the completed Canal.

The total for August was 2,706,223 cubic yards, as compared with 2,813,462 cubic yards in August, 1910, and 2,755,178 cubic yards in August, 1909. All the excavation was "work excavation," there being no "plant excavation."

The dry excavation amounted to 1,698,554 cubic yards, and was principally by steam shovels. The dredges removed 847,771 cubic yards, and 159,898 cubic yards were sluiced, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 455,055 cubic yards. Of this total, 87,599 cubic yards were dry excavation, and the remainder was removed by the dredges in the Atlantic entrance.

The total excavation in the Central Division was 1,464,294 cubic yards, all of which was from the prism. The amount taken from Culebra Cut was 1,442,402 cubic yards, the greatest excavation for a rainy season month in the history of the Cut.

In the Pacific Division, the total excavation was 786,874 cubic yards, 480,315 cubic yards of which were taken out by the dredges at the Pacific entrance, and 149,926 by the hydraulic excavation plant working immediately below Miraflores Locks.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work." Excavation.	"Plant." Excavation.	Total excavation.
Dry excavation—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Locks, Dam and Spillway	22,558	....	22,558
Mindi	65,041	....	65,041
Total	87,599	....	87,599
Wet excavation—			
Atlantic entrance	367,456	....	367,456
Locks, Dam and Spillway	....	....	....
Total	367,456	....	367,456
Total wet and dry excavation	455,055	....	455,055

CENTRAL DIVISION.

LOCALITY.	"Work." Excavation.	"Plant." Excavation.	Total excavation.
Dry excavation—			
Culebra Cut	1,442,402	....	1,442,402
Chagres section	11,920	....	11,920
Wet excavation—			
Chagres section	9,972	....	9,972
Total	1,464,294	....	1,464,294

PACIFIC DIVISION.

LOCALITY.	"Work." Excavation.	"Plant." Excavation.	Total excavation.
Dry excavation—			
Locks, Dams and Spillways	102,469	....	102,469
Diversions	....	....	....
Prism, south of Pedro Miguel Locks	54,164	....	54,164
Total	156,633	....	156,633
Wet excavation—			
Pacific entrance	630,241	....	630,241
Miraflores Locks	....	....	....
Total	630,241	....	630,241
Total wet and dry excavation	786,874	....	786,874

TOTAL CANAL EXCAVATION.

LOCALITY.	"Work." Excavation.	"Plant." Excavation.	Total excavation.
Dry excavation	1,698,554	....	1,698,554
Wet excavation	1,007,669	....	1,007,669
Total	2,706,223	....	2,706,223

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks	66,928	77,739	144,667
Concrete laid in dams and spillways	5,050	....	5,050
Fill placed in dams	491,815	122,015	613,830

COST OF CONCRETE.

Statement of Operations for the Fiscal Year 1910-11.

The total amount of concrete laid during the fiscal year 1910-1911 was 1,742,928 cubic yards. There were laid in the Atlantic Division 970,788 cubic yards, of which 59,651 cubic yards were laid in the Spillway, and 911 137 cubic yards in the locks. In the Central Division, there was laid in connection with the flume constructed for the Obispo diversion 1,020 cubic yards. In the Pacific Division, 771,120 cubic yards were laid, of which 498,187 cubic yards were placed in the Pedro Miguel Locks, and 272,933 cubic yards were placed in the Miraflores Locks. In laying concrete for the locks in the Atlantic Division, the construction plant was operated on the basis of a 12-hour day, and the auxiliary plant on the basis of a 9-hour day, with the exception of a short period between September and November. In the Pacific Division, the work has been done on the basis of an 8-hour day. Taking into consideration the service time of hours at work, it is ascertained that the Atlantic Division laid 237.05 cubic yards per hour, and the Pacific Division, 352.67 cubic yards per hour. The cost per cubic yard for concrete in the Gatun Locks was $6.5919; in the Gatun Spillway, $6.7044; in the Pedro Miguel Locks, $4.7040 per cubic yard; and in the Miraflores Locks, $4.6826. At Gatun, 73,609 cubic yards of large rock were used resulting in a saving of $263,137.45, or of 0.2888 cents per cubic yard on each yard of material placed.

In the production of stone for the concrete, the cost in bins at Gatun was $2.3403 per cubic yard, and in the storage pile for the locks on the Pacific side, $0.8443 per cubic yard. Sand was procured at Nombre de Dios for concrete in the Atlantic Division, and cost $1.8565 per cubic yard in storage. Sand for the locks on the Pacific side was secured at Chamé and cost, in storage, $0.8284 per cubic yard. Crushed stone from Porto Bello is transported to Gatun in barges, and unloaded by cableways and derricks, while crushed rock from Ancon is transported from the quarry by rail to storage, and dumped from trestles. The difference between the cost of towing and unloading, and that of transporting by rail, is $0.7184 per cubic yard. If this be deducted from the actual cost in storage, it leaves a cost of $1.6219 per cubic yard for Porto Bello stone at Gatun, as against $0.8443 for stone for the locks on the Pacific side. The haul for sand from Nombre de Dios is 40 miles, while from Chamé it is 20 miles. The Atlantic Division used cableways and cranes for unloading the sand, while the Pacific Division used electric cranes. Omitting the cost of transportation from the sand banks to the docks, the cost to the Atlantic Division was $1.3142 per cubic yard, and to the Pacific Division $0.6015 per cubic yard. Cement for the large part is delivered in barrels to the Atlantic Division at a cost of $1.19 at tide water in the United States, while in the Pacific Division, it is delivered in bags at a cost of $1.60 at tide water in the United States per barrel, less credit for return of bags. As approximately 90 per cent of the bags were returned and accepted, the cement in bags cost $1.01 per barrel at tide water in the United States.

The construction plant in the Pacific Division handles a large percentage of its cement directly from cars to mixers resulting in reduced rates, whereas nearly all the cement in the Atlantic Division is handled through its storehouse. The year's operations show a difference in favor of the Pedro Miguel Locks of $1.7340 in the cost of cement, sand and stone, and large rock; in the other items which go to make up the cost of the finished product, the Pedro Miguel Locks show a lower cost for forms, placing, pumping, power, repairs, plant arbitrary, and in division expenses, while a difference exists in favor of the Atlantic Division in mixing and reinforcement. The construction plant at Pedro Miguel was in operation in its entirety from the 15th of July to the 1st of February, and a comparison of the costs for the 6 months' period, with the costs at Gatun for the year, show less costs at Pedro Miguel for all items, except for reinforcement.

In the item of mixing, the Pedro Miguel construction plant shows a cost of $0.1334, while at Gatun, the cost by the construction plant was $0.1749 per cubic yard.

Examination of the costs of the work shows also that the amount paid for salaries of clerks, and for supervisory forces, was 26.05 per cent in the Atlantic Division, and 22.95 per cent in the Pacific Division.

Survey for Penitentiary Farm.

A survey has been authorized of some land owned by the Government in the valley and low hills east of Pedro Miguel, to determine its availability for a reservation of about 450 acres for a prison farm. It is expected that, ultimately, the penitentiary, now situated in Culebra on the edge of Culebra Cut, will be moved to this or a similar reservation. The tract in question is near the relocated line of the Panama railroad and the Canal Zone highway.

Land Survey.

Field work on the Canal Zone land survey has been completed, and the data is being collated in the office of the Third Division of the Chief Engineer's office at Culebra. Data have been procured for a general topographical map of all the Zone, except the land that will be covered by water of Gatun and Miraflores lakes. All the principal ridges, watercourses, and trails, have been located and surveyed.

The survey was made under the provisions of an Act of Congress of June, 1910, in which $75,000 was appropriated for this purpose. The object was to make such maps as would enable the Commission to issue leases to Government lands under the provisions of the land law of February 29, 1909. The intention was to make a section survey, dividing the territory covered into sections of two kilometers square, with reference to a principal meridian established at Balboa Hill, near Gorgona, and a parallel passing through the same point. Work in the southeast quadrant developed the fact that such a survey would be of little value, because of the rugged topography, and the fact that much of the land, heretofore considered Government land under the original grant of commons to the city of Panama, is claimed by various people under prescriptive titles. The lines of the estates, so claimed, are referred to ridge tops, watercourses, and trails. The plan was, therefore, changed to a general topographical survey, and the resulting maps will show not only the nature of the country, but also the principal physical features to which many of the claims of prescriptive titles are referred.

CONCRETE WORK IN THE LOCKS.

Over 64 per cent of the concrete for all the locks is in place, the amount at the close of the work on September 9, being 2,701,148½ cubic yards, out of a total of approximately 4,199,400. A total of 26,140½ cubic yards of concrete was laid in the locks during the week ending September 9.

GATUN LOCKS.

Over 79 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on September 9, being 1,582,964½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending September 9, and of the total, follows; and a similar statement for the work in the Spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours daily, and the auxiliary plant 9 hours.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
September 4 (Holiday)	....	....		....	....	....	....	....
September 5	1,816	29.14	8	242	6.40	2	....	2,058
September 6	1,944	34.36	8	536	8.40	2	....	2,480
September 7	1,744	27.46	6	448	7.40	2	....	2,192
September 8	2,098	33.16	4	412	7.40	2	....	2,510
September 9	2,170	34.54	4	344	7.40	2	....	2,514
*Portable mixers	....	....	......	364½	....	......	....	364½
Total	9,772	159.46	6	2,346½	38.20	2	....	12,118½
Previously reported	....	....	......	....	....	......	....	1,570,846
Grand total	....	....	......	....	....	......	....	1,582,964½

*The 364½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days: September 5th, 70; September 6th, 77; September 7th, 64½; September 8th, 70; September 9th, 83.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is about 86 per cent completed, 719,393 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on September 9. The record for each of the five 8-hour working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			⅓-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
September 4 (Holiday)	....	....	......	....	....	......	....	....
September 5	614	16.50	3	....	....	....	....	614
September 6	414	11.00	3	44	1.25	1	....	458
September 7	638	20.00	3	....	....	......	....	638
September 8	524	17.00	3	....	....	......	....	524
September 9	354	10.00	3	252	11.50	2	....	606
Total	2,544	74.50	3	296	12.75	.6	....	2,840
Previously reported	....	....	......	....	....	......	4,411	716,553
Grand total	....	....	......	....	....	......	4,411	719,393

MIRAFLORES LOCKS.

Over 29 per cent of the concrete for the system of two twin locks at Miraflores was in place on September 9, the total amount on that date being 398,791 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the five 8-hour working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			⅓-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Sept. 4	(holiday)				....	......	....	....	......	....	....
Sept. 5	1,140	24.50	5	1,034	16.06	2	....	....	......	....	2,174
Sept. 6	767	19.17	5	1,122	17.00	2	78	5.00	1	....	1,967
Sept. 7	906	20.83	4	1,012	15.00	2	152	13.00	3	....	2,070
Sept. 8	1,088	25.50	6	1,232	16.23	2	209	18.00	3	....	2,529
Sept. 9	1,140	30.00	6	1,108	14.30	2	194	20.00	3	....	2,442
Total	5,041	120.00	5.2	5,508	78.59	2	633	56.00	2	....	11,182
Previously reported	....	...	......	....	....	......	....	....	......	3,693	387,609
Grand total	....	....	......	.. ..	....	......	....	....	.. ...	3,693	398,791

ORDINANCE

Providing for the Impounding of Stray Animals.

Be it enacted by the Isthmian Canal Commission, that the ordinance providing for the impounding of stray animals enacted by said Commission at its 143d meeting, held on April 27, 1908, and approved by the Secretary of War on May 26, 1908, be, and the same is hereby amended and reenacted in form, as follows:

1. It shall be unlawful for the owner or custodian of any horse, colt, mule, ass, bull, steer, cow, calf, hog goat, or sheep, to permit any such animal to be at large within, or in the neighborhood of any labor camp, village, or other settlement in the Canal Zone, or on any watershed, from which any public water supply is obtained, or to be staked or tethered in such place, or in such manner, as to be, or create, a nuisance within, or in the neighborhood of any labor camp, village, or other settlement, or on any watershed.

2 Any animal found at large or tethered contrary to the provisions of the first section hereof shall be taken up and impounded by the police: *Provided*, that any such animal may be taken up by any private individual and delivered to the police for impounding. It shall be unlawful for any person to deliver to the police for impounding any animal other than an animal found at large or tethered contrary to the provisions of the first section hereof.

3. Notice of the impounding of any animal shall be posted by the police in two conspicuous places in the police district in which such animal is impounded, for ten days, including the day upon which the animal is impounded. Such notice shall contain a description of the animal, and shall state where it is impounded, and to whom application should be made for its release. It shall also state that if previous application for the release of the animal is not made, it will be sold before the police station on the tenth day from, and including the day on which it is impounded, at an hour to be stated in the notice.

It shall be unlawful for any person other than the owner or custodian, or agent of the owner or custodian, to secure the release of any impounded animal

4. If application for the release of any impounded animal is not made within eight days from, and including, the date of its impounding, the police shall make application to the district judge of the district for authority for its sale. If it shall appear to the judge that the provisions of this ordinance have been complied with, and that the animal has not been claimed by the owner or custodian, he shall enter an order authorizing its sale at public cry before the police station of the police district in which it is impounded at the time stated in the notice of impounding posted by the police The police shall, thereupon sell the animal at the hour and place stated, to the highest bidder, for cash

5 For each horse, colt mule, ass, bull, or cow impounded there shall be collected one dollar, as a pound fee, and fifty cents per day as a maintenance charge; and for each calf hog, goat, or sheep fifty cents as a pound fee, and twenty-five cents per day as a maintenance charge.

Before the release of any animal to the owner or custodian the proper fees and charges shall be collected from him Upon the sale of any animal under an order of court the court costs shall be deducted from the amount for which the animal is sold, and paid over to the district judge. All amounts collected by the police from the owner or custodian of any impounded animal or from its sale, after paying the costs of court, shall be remitted to the treasurer of the Canal Zone as Zone revenues. There shall be returned to the owner or custodian of any animal sold under the provisions of this ordinance, upon application therefor made, at any time within one year from the date of such sale the amount for which the animal was sold less the pound fees and charges and costs of court.

6. If any impounded animal is suffering from any infectious or contagious disease, or from any disease or injury causing great pain, or is without value, or if no bid is received for any impounded animal offered for sale, the police shall immediately make application to the district judge for authority to destroy it, and the judge shall, if he is satisfied of the facts as stated, enter an order authorizing its destruction.

7. The cost of constructing pounds and feeding impounded animals shall be paid from Canal Zone funds.

8. Any person violating any provision of this ordinance shall be guilty of a misdemeanor, and on conviction thereof, shall be fined not more than twenty-five dollars, or imprisoned not longer than thirty days or both fined and imprisoned, in the discretion of the court.

9. This ordinance supersedes and repeals the provisions of any ordinance, regulation, or law in force in the Canal Zone prohibiting persons from permitting animals to run at large, or providing for impounding such animals, and the provisions of any other ordinance, regulation, or law in force in the Canal Zone in conflict with it.

Enacted by the Isthmian Canal Commission, August 5, 1911.

Approved by the Secretary of War, August 22, 1911.

Opening of Public Schools.

The Superintendent of Schools announces that the public schools of the Canal Zone will open on Monday, October 2, at 9 a. m. All children of the Canal Zone, whether of employes or nonemployes, and all nonresident children of employes of the Isthmian Canal Commission, are entitled to free school privileges. No child will be admitted however, who will not be six years old on or before February 1, 1912.

Schools for white children will be opened at Ancon, Pedro Miguel, Paraiso, Culebra, Empire, Bas Obispo, Gorgona, Gatun, and Cristobal. Schools for colored children will be opened at Miraflores, Pedro Miguel, Paraiso, Cucaracha, Culebra, Empire, Mandingo, Matachin, Gorgona Gatun, Mount Hope, Cristobal, Marajal, Cruces.

Requests should be made to the Superintendent of Schools, Ancon, immediately, for railroad transportation for white children living in communities where schools or brake service are not provided.

The teaching force will be composed of 43 white, and 24 colored and native teachers, and there will be two supervisors, in addition to the superintendent. Music will be continued under the direction of the leader of the Commission band.

The school for colored children at Marajal, a native village on the Escondido River, across Manzanillo Bay from Colon, will be conducted in the Catholic church by a native teacher, who speaks both Spanish and English. There are about 75 children of school age in the settlement, and about 35 of these are expected to attend. The new school at Mandingo, near Las Cascadas, will be held in a remodeled building. There are [illegible]5 children of school age in the settlement. The schools at Cucaracha and Miraflores will be held in refitted French buildings. The teaching of gardening to the colored children will be continued. It is planned to add a hectare of land to the Empire school garden, and some citrus trees will be set out.

Ancon Rock Crusher.

A statement of the rock crushed at Ancon quarry during the weeks ending September 2 and 9, follows:

DATE.	Hours worked.	Cubic Yards.
August 28	7.10	2,432
August 29	6.55	2,600
August 30	8.35	2,878
August 31	7.55	2,60[illegible]
September 1	7.00	2,702
September 2	7.10	2,439
Total	44.45	15,653

DATE.	Hours worked.	Cubic Yards.
September 4 (Holiday)	....	....
September 5	8.35	2,282
September 6	6.30	2,244
September 7	7.30	2,623
September 8	7.00	2,627
September 9	7.00	2,360
Total	37.35	12,136

Missing Men.

Any one having information regarding the present whereabouts of Frederick T Harris, who left the service of the Isthmian Canal Commission on April 18, 1910, is requested to communicate with the American Legation, Panama.

Any one having information regarding the whereabouts of the following named men, who are supposed to have come to the Isthmus of Panama, are requested to communicate with THE CANAL RECORD, Ancon, C. Z.: A. A. Ramsey, H. B. Start, George Payne, and Thomas G. Gurish.

Lectures on Health.

More than five hundred persons attended the illustrated lecture on tuberculosis held in the large hall on the corner of Cash and D streets, Colon, on Thursday evening, August 31. The lectures are given under the auspices of the Cristobal Woman's Club, and are free to any who wish to attend. The success of the series has been so marked that the organizers will ask the cooperation of the Canal Zone Federation of Women's Clubs, and the different local organizations in the Canal Zone, to arrange for similar lectures in the American villages. Each of the Commission clubhouses has the equipment necessary for the exhibit of the lantern slides, and any club which will guarantee the small expenses incidental to the transportation of the slides and the machine, will be welcome to the use of them. Lectures are being prepared in Spanish and in French, with a view to reaching the natives and the French speaking people. The next lecture will be on the typhoid germ and the danger of the house fly.

The steamship *Cristobal* will sail from pier No. 11, Cristobal, for New York, on Sunday, September 17, at 4 p. m.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M'THS.	CULEBRA SECTION.*								CHAGRES SECTION.**				
	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
Jan	....	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	....	169,447	389,399	175,802	255,385
Feb	....	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	....	200,145	450,182	286,309	219,550
March	....	132,840	239,178	815,270	1,290,885	1,434,597	1,509,728	1,728,748	....	324,233	619,491	484,846	297,339
April	....	126,749	213,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	....	329,483	510,020	428,777	102,103
May	27,556	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	....	235,902	386,170	248,974	29,783
June	32,551	76,905	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	....	322,145	275,900	164,389	32,288
July	31,599	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	....	345,757	233,897	166,106	22,284
August	35,056	49,210	244,823	786,866	1,171,927	1,173,370	1,377,714	1,442,402	2,900	368,683	231,543	234,404	21,892
Sept	25,220	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	....	21,546	346,948	235,818	234,290	....
Oct	19,695	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	....	25,627	424,911	221,409	271,409	....
Nov	28,860	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	....	44,044	336,390	93,619	260,882	....
Dec	42,935	70,630	307,689	1,025,485	1,210,046	1,152,022	1,211,400	....	98,652	383,948	105,044	197,481	....
Totals.	243,472	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	11 389,167	192,769	3,787,992	3,752,492	3,153,669	980,624

ATLANTIC DIVISION. / PACIFIC DIVISION.¶

MONTHS.	ATLANTIC DIVISION. COLON (MINDI)†		GATUN LOCKS, DAM AND SPILLWAY.††				PACIFIC DIVISION.¶ PEDRO MIGUEL LOCKS.‡				MIRAFLORES LOCKS, DAMS AND SPILLWAY.‡‡			
	1909.	1911.	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1911.
January	45,664	....	292,155	102,690	125,011	65,889	....	83,726	27,320	15,690	7,203	61,202	31,479	48,744
February	46,046	47,102	282,797	95,031	123,738	50,511	....	58,242	9,486	6,809	39,046	53,689	15,300	12,936
March	70,713	49,734	374,598	90,051	132,007	51,431	....	95,624	6,784	674	73,194	51,417	18,184	72,739
April	74,368	74,030	373,456	70,009	103,243	12,548	....	101,365	9,129	255	98,943	60,060	12,148	79,751
May	71,407	64,482	266,747	52,786	82,958	17,677	....	57,523	10,405	5,905	73,023	47,588	20,250	57,975
June	80,101	59,157	244,951	36,556	88,088	4,840	13,228	70,971	8,420	7,454	68,691	55,653	21,994	38,023
July	82,378	58,125	213,359	39,058	95,503	6 897	22,648	77,503	4,410	6,273	104,369	50,999	11,990	97,884
August	66,249	65,041	188,262	40,346	99,737	22,558	22,217	58,025	12,789	220	94,248	35,446	17,548	102,249
Sept'mber	61,437	....	145,990	49,945	103,040	....	28,833	48,825	10,405	....	90,923	31,803	8,590	....
October	72,643	....	154,064	57,321	118,327	....	48,875	39,002	7,433	....	74,700	25,349	9,850	....
November	42,009	....	118,278	63,452	94,552	....	55,401	20,207	10,636	....	52,930	18,644	9,400	....
December	....	....	119,904	96,590	72,030	....	65,578	28,342	11,195	....	69,650	20,083	17,906	....
Totals	713,015	417 671	2,774,561	793,835	1,238,234	232,351	256,780	739,355	128,412	43,280	846,920	511,933	194,639	510,301

*Total to September 1, 1911, 68 295,100 cubic yards.

**Total to September 1, 1911, 11,867 546 cubic yards, of which 167,247 cubic yards were removed by sluicing.

†Total to September 1, 1911, 1,894,492 cubic yards; in this total are included 172,851 cubic yards removed in 1907, and 590,955 cubic yards removed in 1908.

††Total to September 1, 1911, 6,405,788 cubic yards; in this total are included 26,628 cubic yards excavated October to December, 1906, and 1,340,179 cubic yards in 1907.

‡Total to September 1, 1911, 1,167,827 cubic yards.

‡‡Total to September 1, 1911, 2,063,793 cubic yards.

¶There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 535,734 cubic yards at differeut points in prism to Sept 1, 1911. There were also 172 cubic yards removed by steam shovels outside of prism during October, 1908.

WET EXCAVATION.

MONTHS.	ATLANTIC DIVISION. ATLANTIC ENTRANCE.§					GATUN LOCKS †		PACIFIC DIVISION. PACIFIC ENTRANCE.§§							Miraflores Locks.§§§	
	1907	1908.	1909.	1910.	1911.	1908.	1909.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1910.	1911.
Jan.	111,100	490,701	521,050	510,055	520,181	.....	97,043	....	95,940	94,710	460,250	469,529	518,936	379,810	....	89,243
Feb.	110,002	427,722	444,910	493,448	455,318	.....	132,291	....	95,940	93,480	663,519	671,477	285,791	386,866	....	87,335
Mar.	84,145	546,886	461,208	412,325	391,736	.....	141,838	....	116,820	92,319	783,281	865,696	462,588	639,761	....	......
April	69,889	496,366	470,635	190,574	492,579	.....	17,938	....	110,700	104,855	676,539	731,767	534,322	439,622	....	......
May	133,847	564,386	315,370	447,578	514,178	.....	52,011	....	112,340	122,157	530,466	720,753	484,509	548,047	....	......
June	124,118	572,749	182,575	458,021	452,098	.....	38,829	50,676	62,697	133,575	656,621	844,685	475,486	576,100	....	......
July	109,922	625,497	348,451	423,092	425,195	.....	....	41,533	98,400	108,338	696,170	733,181	515 782	520,692	....	......
Aug.	194,297	638,217	422,846	508,829	367,456	..	....	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....	......
Sept	403,842	624,776	410,574	451,873	....	.....	....	114,308	105,780	153,975	750,080	662,976	473,585	....	......	......
Oct.	415,120	505,260	314,778	549,788	....	.....	....	81,836	97,170	357,122	762,276	720,920	467,873	....	40,000	......
Nov.	422,797	570,832	457,889	600,708	....	.....	....	71,176	92,988	365,423	609,089	627,791	425,370	....	47,444	......
Dec.	442,835	679,604	489,121	482,370	....	8,583	....	71,094	90,528	349,551	729,960	727,460	387,034	....	68,681	......
Tot'ls	2 621,914	6,742,996	4,839,407	5,528,661	3,618,741	8,583	479,950	485,153	1,191,233	2,143,789	8,056,025	8,399,498	5,538,745	4,121,139	156,125	176,578

§Total to Sept. 1, 1911, 24,779,184 cu yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906.

§§Total to September 1, 1911, 29,935,582 cubic yards. Of this amount, 417,375 yards were removed by monitors.

§§§Total to September 1, 1911, 642,350 cubic yards; in this total are included 309,647 cubic yards excavated in 1909.

†Total to September 1, 1911, 488,533 cubic yards. There were also 38,425 cubic yards removed by dredges at Gatun Dam site in 1907.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.			PEDRO MIGUEL LOCKS.			MIRAFLORES LOCKS.		
	1909.	1910.	1911.	1909.	1910.	1911.	1909.	1910.	1911.
Jan	......	54,136	72,919	....	16,273	38,513	......	....	24,018
Feb.	......	55,696	72,103	....	13,218	37,011	......	146	20,896
March	......	60,998	86,884	....	18,793	44,716	......	314	31,173
April	......	63,227	67,361	....	24,522	28,635	......	13	38,758
May	......	74,273	67,844	....	29,576	19,135	......	27	36,154
June	......	89,401	55,305	....	30,631	18,243	......	1,603	26,536
July	......	84,001	71,046	....	41,464	19,906	28	3 672	32,840
Aug.	1,298	85,686	66,928	....	51,264	20,736	74	6,030	57,003
Sept.	12,294	76,720	....	2,370	50,702	....	......	18,133	....
Oct.	29,378	86,949	....	8,310	61,422	....	......	22,159	....
Nov.	30,270	75,152	....	10,169	64 248	....	......	23 871	....
Dec.	42,832	80,212	....	13,007	42,834	....	......	21,533	....
Total	116,072	886,451	560,390	33,856	414,947	226,895	102	97,501	267,378

From March 17, 1909, to September 1, 1911, there were placed in the Spillway of Gatun Dam 155,322 cubic yards of concrete, including 5,050 cubic yards placed in Aug., 1911; in Miraflores Dam, there were placed 321 cubic yards up to September 1, 1911.

FILL PLACED IN DAMS.

M'THS.	GATUN.*				PEDRO MIGUEL.†		MIRAFLORES.‡			
	1910.		1911.		1910.	1911.	1910.		1911.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan.	178,254	236,994	211,992	218,690	... .	......	....	28,151	89,243	24,685
Feb.	292,215	271,788	301,733	211,008	11,510	.....	....	1,438	87,335	32,404
Mar.	210,387	332,661	342,809	255,047	22,860	....	......	5,385	25,131	23,940
April	242,440	263,437	368,658	205,130	31,394	......	....	....	14,100	67,260
May	249,283	194 868	419,348	207,751	23,572	......	....	6,480	18,353	30,032
June	384,166	258,653	432,008	247,996	1,350	......	....	7,356	53,858	28,315
July	462,092	180,111	324,947	201 996	......	14,865	....	4,290	24,957	54,415
Aug.	406,606	229,774	259,389	232,426	......	24,812	....	10,898	25,000	72,203
Sept.	457,637	223,102	....	....	......	......	....	11,220	....	....
Oct.	480,732	259,619	....	....	......	......	40,000	14,370	....	....
Nov.	129,666	266,105	....	....	......	......	47,444	8,960	....	....
Dec.	243,121	169,575	....	....	......	..	68,681	39,224	....	....
T'tal	3,736,599	2,886,687	2,660,875	1,780,044	90,686	39,667	156,125	137,772	337,977	333,254

*Dry fill begun in January, 1907, and 2,096,477 cubic yards of wet, and 3,241,418 cubic yards of dry fill were placed in 1907, 1908 and 1909.

†170,166 cubic yards placed in dams up to December, 1909, inclusive.

‡138,587 cubic yards of wet fill and 472,091 cubic yards of dry fill were placed in dams up to December, 1909.

CANAL EXCAVATION TO DATE.

By French Companies		78,146,960
French excavation useful to present Canal		29,908,000
By Americans—		
Dry excavation	92,141,438	
Dredges	56,051,321	
Total		148,192,759
May 4 to December 31, 1904	243,472	
January 1 to December 31, 1905	1,799,227	
January 1 to December 31, 1906	4,948,497	
January 1 to December 31, 1907	15,765,290	
January 1 to December 31, 1908	37,116,735	
January 1 to December 31, 1909	35,096,166	
January 1 to December 31, 1910	31,437,677	
January 1 to August 31, 1911	21,785,695	

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation	8,300,280	33,606,422	199,867	13,621,400
Dredges	25,306,142		13,421,533	
Central—				
Culebra Cut	68,295,100	80,162,646	21,148,905	21,638,650
All other points	11,867,546		489,745	
Pacific—				
Dry excavation	3,845,759	34,423,691	3,086,321	11,870,570
Dredges	30,577,932		8,784,249	
Grand totals		148,192,759		47,130,620

NEW EXCAVATION ESTIMATE.

Grand Total for the Entire Canal Placed at 195,323,379 Cubic Yards.

The statement of Canal excavation, published in this issue of THE CANAL RECORD, contains a new estimate of the amount of material yet to be removed in each of the construction divisions, the total increase being 12,785,613 cubic yards over the estimate of July, 1910, raising the total estimated excavation for the entire Canal to 195,323,379 cubic yards. This addition will not increase the estimated cost, as determined in December, 1908, nor affect the time of completion, because the cost per cubic yard has decreased, and the capacity per excavating unit has increased, as the work has advanced.

In the Central Division, there have been added 5,257,281 cubic yards to allow for slides in Culebra Cut, while a deduction of 581,003 cubic yards has been made from the estimated excavation at other points. The net addition to this division is therefore, 4,676,278 cubic yards. The new estimates for the Atlantic and Pacific Divisions include additional excavation, due to the silting in the Atlantic and Pacific entrances, to small slides that have developed in the Canal banks, and to minor changes. A statement of the original estimate of December, 1908, and the revised estimates of July 1, 1910, and September 1, 1911, follows:

DIVISIONS.	1908.	1910.	1911.
Atlantic—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Wet	33,515,399	35,084,291	38,727,675
Dry	9,561,911	8,273,054	8,500,147
Total	43,077,310	43,357,345	47,227,822
Central—			
Culebra Cut	78,042,295	84,186,724	89,444,005
Other	11,752,198	12,938,294	12,357,291
Total	89,794,493	97,125,018	101,801,296
Pacific—			
Wet	35,864,211	35,675,261	39,362,181
Dry	5,930,580	6,380,142	6,932,080
Total	41,794,791	42,055,403	46,294,261
Grand total	174,666,594	182,537,766	195,323,379

A statement of the amount of excavation already done in each division, and the amount remaining will be found in the table on the fourth page of this issue.

Material for the Locks.

New bids have been requested for 127,000 linear feet of copper conductor bars, with copper splice bars, to be used to transmit electrical energy to the towing locomotives at the locks. The new advertisement is due to the fact that no satisfactory bids were received on the former advertisement The bars must be manufactured from pure copper ingots by rolling, drawing, or by the extrusion process. The splice bars must be pure rolled or drawn copper, having a burnished finish. The amounts specified may be increased by 50 per cent, or decreased by 25 per cent, at the option of the Commission.

The first shipment of steel "T" conductor rails for use on the towing tracks at the locks, and of steel cross-ties for the towing tracks, has been received. Specifications for the electric towing locomotives have been forwarded to the Washington office, in order that bids may be procured on this equipment.

Advertisement has been made for 1,500,000 feet of square vitrified duct, to be used in the electric conduit system of the operating tunnels of the locks. The opening in the duct must be 3½ inches square, and the outside dimensions must be not less than 4 7-8, nor more than 5 inches. The bulk of the material is to be in 18-inch lengths, with two per cent of shorter lengths.

Culebra Cut Slides.

Steam shovels have been set at work on the slide back of the division office at Empire excavating the material that has moved into Culebra Cut. This slide is unique in that a ridge, or steep side of the bank, moved toward the prism from the back, and both sides at apparently one time. It is estimated that three hundred thousand cubic yards of material are comprised within the slide, although an accurate estimate is impossible, owing to the fact that the depth of the moving mass cannot be ascertained.

At Cucaracha village, south of the big Cucaracha slide, a flat section of earth has begun to move toward the Canal. The break extends back 100 yards from the 95-foot berm, and is about 100 yards long on the face. The unknown depth of the mass makes a careful estimate impossible here also, but it is believed that about 150,000 cubic yards are in motion.

So far as interference with the excavation work is concerned, the slides in Culebra Cut are in more satisfactory condition than during any September since 1907. The total amount in slides represents about one-fourth of the material yet to be removed from Culebra Cut.

PERSONAL.

Mr. A. B. Nichols left for his annual leave in the States on the *Colon*, which left Cristobal on September 5.

Mr. James C. Courts, Clerk of the House Committee on Appropriations, with his daughter, arrived on the *Cristobal* on September 7. While on the Isthmus, Mr. Courts will assist in preparing the annual estimates for the Isthmian Canal Commission.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 69 per cent completed, 154,570 cubic yards, out of a total of 225,000, having been placed at the close of work on September 9. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
September 4 (holiday)	....	....	....
September 5	172	16.00	2
September 6	164	10.30	2
September 7	160	8.00	1
September 8	118	6.30	1
September 9	148	8.00	2
Total	162	49.00	1.60
Previously reported	153,808		
Grand total	154,570		

Organization of a Rifle Club.

There will be a meeting in the Ancon lodge hall on Sunday, September 17, at 10 a. m., for the purpose of organizing a rifle and pistol club, to be affiliated with the National Rifle Association of America. All citizens of the United States residing in Ancon and Corozal, who are interested, are invited to attend.

Balboa Dock Construction.

Forty of the 53 caissons for the new Panama railroad dock at Balboa are under construction, [illegible]5 have been sunk to bed rock, and 12 have been filled with concrete to the desired point, namely, 10 feet below sea level. It is expected that the work of placing the girders for the superstructure will be started within the next two weeks. The work schedule of July 17, which provided for day and night shifts, is still in effect. The men on the night force are mostly engaged in excavating for the caissons, the concrete work being carried on only in the daylight hours. A force is also kept on the work Sundays.

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher by days, for the week ending September 9, follows:

DATE.	Hours worked.	Cubic Yards.
September 4 (Holiday)	....	....
September 5	4.03	1,565
September 6	4.30	1,677
September 7	5.15	1,938
September 8	5.46	2,186
September 8th	4.11	1,603
Total	23.45	8,969

Work of Unloaders in Central Division.

The following statement shows the number of Lidgerwood cars unloaded by the Central Division during the month of August, 1911:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa	3	1,062	21,240
Miraflores	3	784	15,680
Gamboa	4	1,172	24,610
Total	10	3,018	61,530

Married.

BENSON–MITCHELL—On the 8th of September, in Cristobal, Robey W. Benson of Baltimore, Md., to Carolyn A. Mitchell of Hamilton, Md., the Rev. Carl H. Elliott officiating. Canal Zone residence, Cristobal.

BOWES–BOWSER—On the 11th of September in the I. C. C. chapel, Cristobal, George Lester Bowes to Alice Jane Bowser, both of Lock Haven, Pa., the Rev. Carl H. Elliott officiating. Canal Zone residence, San Pablo.

WIKINGSTAD–HOLDEN—On the 11th of September in Cristobal, Knut Mathias Wikingstad of Brooklyn, N. Y., to Anna Maria Holden of Christianson, Norway, the Rev. Carl H. Elliott officiating. Canal Zone residence, Cristobal.

ELDER–GEER—In the Commission chapel, Cristobal, on July 11, Garnet Geer to Ralph Elder, the Rev. Carl H. Elliott officiating. Canal Zone residence, Cristobal.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Gorgona, C. Z., on Sunday, September 17, 1911, at 6 p. m. The program follows:

1. March—*Ideal*........................Reeves
2. Selection—*The Dollar Princess* (by request)..Fall
3. Intermezzo—*Elegante from Tales of Hoffman* (by request)....Offenbach
4. Overture—*Morning, Noon, and Night in Vienna*......Suppe
5. Flower song—*Hearts and Flowers* (by request)........Tobani
6. Waltz—*Casino Tanze*....................Gung'l
7. Serenade—*La Paloma* (by request)......Yradier
8. Popular medley—*Remick's Hits*.........Lampe
9. March—*Unter den Siegesbanner*........Von Blon

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Empire, C. Z., on September 24 at 6 p. m.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending September 20, 1911 (75th meridian time):

DATE.	Low.	High.	Low.	High.	Low.
	A.M.	A.M.	P.M.	P.M.	P.M.
September 14	1.10	7.10	2.37	7.37	......
September 15	1.55	7.55	2.30	8.30	......
September 16	2.50	8.50	3.27	9.30	......
September 17	3.55	10.00	4.35	10.45	......
September 18	5.15	11.20	5.55	......	......
			A.M.		
September 19	......	12.15	6.35	12.40	7.10
September 20	......	1.25	7.45	1.50	8.10

SOCIAL LIFE OF THE ZONE.

Women's Clubs—Plans for the Club Year.

A meeting of the executive board of the Canal Zone Federation of Women's Clubs was held at Cristobal on Friday afternoon, September 8, when plans for the club year were discussed, and arrangements for the annual meeting in January were made. The sale of the cook book has been completed with a profit of about $50, which has been added to the club treasury. The librarian reported the progress of work with the juvenile library, which is now in Gorgona. The board authorized the enlargement of the art collection. This collection, which is handled by the librarian, has already been exhibited at one of the schools, and it will be offered as a traveling exhibit to be shown at any of the public schools in the Zone during the school year. A committee was appointed to take charge of the purchase of the usual Christmas gifts for the inmates of the leper colony. A supply of pins will be ordered, and members of the federated clubs will be able to purchase these from the treasurer at, or before, the annual meeting.

The January meeting will be held at Cristobal on the 20th or 27th, and will be in two sessions—the business meeting, with election of officers, in the morning; and the program meeting, with addresses and a reception, in the afternoon.

The Cristobal Woman's Club will resume meetings after the four months' recess on Wednesday afternoon, September 27, when there will be a general reception to the outgoing and incoming officers. Following this, the meetings will be held semimonthly, as usual. The work of the committees for the year is outlined, as follows: The seven meetings of the art and literature department will be devoted to the study of paintings and masters, folk song, and folk lore. Mrs. R W. Hart is chairman. The home department, with Mrs. Edward Beverly as chairman, will study home life in Switzerland, England, and Japan. The department will also have charge of three programs for the general meetings of the club, and will have one lecture on the history of furniture and rugs, and one on modern domestic science. There will be other addresses on education and the child, women in philanthropy, modern tendencies toward the preservation of life and health. Among the speakers will be Miss Alice Alexander, the Rev. Carl H. Elliott, Judge Thomas E. Brown Jr., and Dr. A. J. Orenstein. The meetings of the club are, as follows: A general meeting with program on the first Wednesday in each month, meeting of the home department on the second Wednesday, art and literature department on the third Wednesday; and a meeting of the executive board on the fourth Wednesday. The officers for the year are: President, Mrs. Carl H. Elliott; first vice-president, Mrs. Thomas E. Brown, Jr.; second vice-president, Mrs. E. H. Colip; recording secretary, Mrs. Max Culbertson; corresponding secretary, Mrs. Charles Butters; treasurer, Mrs. Fred Guderian. Mrs. R. G. Whittaker is chairman of the educational department, and Mrs. L. E. Willson chairman of the philanthropy department. The house and social committees have as chairmen, Mrs Webster Morris and Mrs. E. K. Turner. Mrs. William H. Bell is chairman of the special committee on the free educative lectures on tuberculosis.

The meetings of the Gatun Woman's Club will be resumed on September 27. During the absence of the president, Mrs. W. H. Martin, the first vice-president, will act in her place. The plans for the work of the club will be given at the first meeting.

The Empire Woman's Club held its first meeting with the study of China and India, on Thursday afternoon, September 7. The work is outlined to continue through the year.

The Paraiso Woman's Club resumed its regular meeting on Wednesday afternoon, September 6. The club will continue to work along the lines of last year. The meetings will be held on the first and third Wednesday afternoons in each month. Efforts will be made to continue the social side by giving entertainments from time to time. Current events will be a part of the program of each meeting. The following officers were elected: President, Mrs. C. E. Hennigh; vice-president, Mrs. H. Bain; secretary, Mrs. E. H. Coutermarsh; treasurer, Mrs. George Ruggles.

Church Notes.

The annual meeting of the Woman's Foreign Missionary Society of the Methodist Episcopal church of the city of Panama was held at the home of Mrs. E. H. Keyser on Thursday afternoon, September 7. The society welcomed Mrs. Harry Compton, the wife of the pastor of the church, who arrived on the Isthmus, with her daughter, on the *Colon* on August 31. A special program of vocal and instrumental music was given. The officers elected are: President, Mrs. Compton; vice-president, Mrs. J. H. Stokoe; secretary, Miss Elsie Keyser; treasurer, Mrs. Walter Bray, with the additional duty of treasurer of the mite boxes. At the next meeting, which will be held at the parsonage on the sea wall on Thursday, October 5, the study of the new text book, "The light of the world," will be begun. This is the third book that has been taken up by the society. The study work was begun in October, 1909.

Mrs. Compton will have charge of the Methodist college on the sea wall, Panama. She will begin her duties this month, and will prepare for the extension of the work in October, when classes will be established in domestic science for girls, and in manual training for boys. The monthly communion service will be held in the Methodist church on the first Sunday in October.

The Ladies' Aid Society of the Cristobal Christian League held its meeting at the home of the Rev. Carl H. Elliott on Thursday, September 7. The society is engaged in the systematic study of missionary work in foreign fields.

The Rev. Henry Haigh, president of the Wesleyan Methodist Conference, accompanied by Mrs. Haigh and their daughter, and Miss Hodson Smith, left England on August 2 for a tour of the mission stations of the church in the West Indies, British Guiana, and the Isthmus of Panama. They were accompanied by the Rev. Hodson Smith, the Rev. J H. Moulton of Didsbury College, Manchester, and Mr. Henry Bisseker of Birmingham. The party arrived in Colon on September 4, and public meetings were held in honor of the president, both in Panama and Colon. They sailed on September 5 for Jamaica for a two weeks' stay, and will proceed to Toronto, Canada, to attend the meetings of the Methodist Ecumenical Conference.

The Rev. Jesse R. Bicknell, chaplain at Ancon Hospital and the Protestant chapel, sailed on the *Colon* on September 5, to return to his former post as assistant priest at St. Paul's mission church, Baltimore Major Henry A. Brown, chaplain, Engineer Corps U. S. A., has been appointed in his place. The Episcopal church services at Trinity mission, Culebra, will be discontinued for the present.

Red Cross Endowment and Finances.

The following committee was appointed by Miss Mabel Boardman of the executive committee of the American National Red Cross, some months ago, to raise the sum of $700, to be contributed by the Canal Zone Chapter, for the Endowment Fund of the American National Red Cross. The committee has completed its labors, and, on September 9, the sum of $709.63 was forwarded to the headquarters of the American National Red Cross at Washington. The committee gave various entertainments, and, with the assistance of the members of the Canal Zone Chapter, its efforts have met with success:

Dr. A. J. Orenstein, Ancon; Alexander P. Crary Corozal; J. T. Smith, Pedro Miguel; Edw. Schildhauer, Culebra; T. L. Clear, Empire; J. B. Fields, Las Cascadas; W. B. Wheeler, Bas Obispo; B. M. Litt, Gorgona; Dr. Geo. H. Gorham, Tabernilla; Major Chester Harding, Gatun; Wm. F. Bennyhoff, Cristobal.

The financial statement of the Canal Zone Chapter, American National Red Cross, for the month of August, follows:

RECEIPTS.		
August 1, On hand		$3,101.19
August 3, Return of amount loaned to Spaniard who went to Cuba — See June statement	32.95	
August 18, Return of amount loaned the Baptist minister at Colon—See P. R. R. bill, 3,389	30.00	
August 31, Membership dues during August	10.00	
Total receipts		$3,174.14
DISBURSEMENTS.		
August 14, Relief of a family of a conductor at Empire..	30.00	
August 19, Advance for expenses of sending the three Besley children from Tabernilla to their home in Jamaica	25.00	
August 21. Relief of destitute dentist at Las Cascadas	40.00	
Total disbursements		$ 95.00
August 31, Balance on hand		$3,079.14

Approved: JOHN L. PHILLIPS, *Treasurer.*
C. A. DEVOL, *Chairman.*

Specimens of fossils collected by the Commission geologist have been sent to the Smithsonian Institution, where they will be identified by W. H. Dall, the authority on tertiary fossils. The specimens are early tertiary fossils, some of which belong to the oligocene, and they will be identified for reference to the subdivisions of middle and late tertiary times.

Paper sanitary drinking cups have been placed in the coaches of the Panama railroad, and the common cup has been abolished. The cups are also on sale at the commissary stores for five cents a dozen.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

Following is the schedule for the moving picture entertainments for the week of September 18 to 23: Monday, Gatun; Tuesday, Cristobal; Wednesday, Gorgona; Thursday, Corozal; Friday, Empire; Saturday, Culebra.

Following is the standing of the Isthmian bowling league tournament, now in progress:

	Won.	Lost.	P. C.
Cristobal	8	4	.667
Empire	8	4	.667
Marines	7	5	.583
Gorgona	6	6	.500
Gatun	5	7	.416
Culebra	3	9	.333

CULEBRA.

The gymnasium class meets every Wednesday evening, and will be followed by basketball.

The following are the results of the league games bowled at Culebra with the Marines from Camp Elliott:

Culebra.				Camp Elliott.			
Leylander	103		184	McDowell	133	163	144
Bronson	137	120		Austin	187	160	142
Huttlemaier	167	160	183	Meyers	116	134	145
Fleishman	164	137	162	Clause	171	152	117
Sickler	136	156	184	Martins	117	149	160
Wheeler		139	125				
Total	707	718	838		724	758	708

At Camp Elliott, Culebra took two out of three games. The following high scores were rolled in duckpins during the week: Huttlemaier, 105, 110, 114, 126; Mitchell, 106, 108.

EMPIRE.

The following scores of 200, or over, were bowled, during the past week: Tenpins—Pinney, 204, 204; Parkis, 214, 202, 202; Huson, 203, 223; Goolsby, 201, 201. Duckpins—Dakin, 104, 100; Rodeghiero, 102, 131

The league game bowled on the Empire alleys on Saturday, September 9, resulted in Empire winning two out of three games from Cristobal. The scores were, as follows:

Empire.				Cristobal.			
Sawtelle	180	181	153	Barrett	155	138	134
Spinks	193	186	146	Collins	199	177	155
Gorbam	164	193	173	Burns	115	188	143
Pearson	153	146	149	Bullard	176	244	179
Huson	194	173	158	Louch	199	169	167
Total	884	879	779		844	916	778

The subject for discussion by the literary society for September 15 will be "The middleman."

Next Saturday night, September 16, there will be another "Open house." A musical program will be given, and refreshments will be served. On Sunday, September 17, there will be an informal "Sing" at 9 o'clock.

GORGONA.

The "smoker" and Labor Day celebration on Monday night, September 4, was well attended. Songs were sung, and toasts, in the form of tributes to labor, were heard from leading men in the various crafts employed in Gorgona. Moving pictures were also shown, and refreshments were served

In the second contest of the Isthmian bowling league rolled on the Gorgona alleys, Gatun lost two out of three games to the local team. The scores were, as follows:

	1st game.	2nd game.	3d game.
Gatun	758	768	891
Gorgona	787	797	722

The high bowling scores for the week ending September 9 are, as follows: Glow, 207; Sims, 203; Haldeman, 215.

GATUN.

A record of the games bowled on the Gatun alleys on Saturday, September 9, follows:

Gorgona.				*Total.*
Arnold	120	166	136	422
Sims	192	174	166	532
Orr	157	143	112	412
Burns	142	179	171	492
Haldeman	167	170	107	444
Total	778	832	692	2,302

Gatun.				*Total.*
Omeara	155	181	145	481
Chamberlain	157	163	170	490
Galloway	165	136	125	426
Green	157	159	165	481
Barte	167	147	186	500
Total	801	786	791	2,378

The orchestra from the *Prinz August Wilhelm* gave a concert at the clubhouse on Tuesday night. The attendance was about 300.

The gymnasium classes will be in charge of J. T. Hopkins of Gorgona on Tuesday and Friday nights of each week at 8 o'clock. The exercises will consist of marching, calisthenics, mat work, and recreative games. Miss Harris has been engaged to play the piano.

The entertainment to be given under the auspices of the Spanish War Veterans on Saturday, September 9, was postponed, and will be given on September 16. A cordial invitation is extended to all who wish to attend.

Gatun won two games from the Gorgona bowling team on Saturday night. The scores were, as follows:

				Total.
Gorgona	778	832	692	2,302
Gatun	801	786	791	2,378

CRISTOBAL.

Owing to the postponement of the debating club session on September 6, the topic for discussion which was assigned for September 13, will be debated on Wednesday, September 20—"Resolved, that the present banking laws are inimical to our republican form of government."

During the month of August, 3,122 games were bowled on the bowling alleys. The match game in the Isthmian bowling tournament, bowled on the alleys on Saturday night, between Empire and Cristobal teams, resulted in Empire taking two out of the three games rolled, the scores being as follows:

Empire.				Cristobal.			
Parkis	151	184	210	Gibson	176	178	137
Pinney	152	178	157	Blackburn	198	141	164
Anderson	198	145	166	Wallace	181	133	
Davis	235	138	134	Wheeler	147	155	138
Giavelli	146	182	137	Furlong	209	170	141
				Grover			118
Total	882	827	804		911	777	698

PORTO BELLO.

The results of the recent tournament, follow:

	Played.	Won.	Lost.	P. C.
McDevitt	5	4½	½	.900
Hanbury	8	6½	1½	.813
Morgan	10	8	2	.800
Tuttle	10	8	2	.800
Gaskill	10	5½	4½	.550
Mackintosh	10	4½	5½	.450
Colberg	7	3	4	.429
Corrigan	7	3	4	.429
Wright	8	2½	5½	.313
Cornelison	3	½	2½	.167
Goodfellow	8	1	7	.125
Rogers	7	0	7	.000

Rainfall from September 1 to 9, 1911, Inclusive

Stations.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	.96	4	2.05
Balboa	1.51	1	3.34
*Miraflores	1.05	2	3.18
Pedro Miguel	.92	2	3.21
Rio Grande	.77	8	3.05
Central Section—			
Culebra	.78	3	2.69
*Camacho	.70	8	2.96
Empire	.64	5	2.35
Gamboa	.63	5	2.12
*Juan Mina	.91	5	3.39
Alhajuela	1.11	7	2.87
*El Vigia	.94	7	2.41
*Gorgona	.58	5	1.64
San Pablo	.44	2	1.16
Tabernilla	.35	5	0.84
Bohio	.46	1	1.16
*Monte Lirio	2.00	1	3.56
Atlantic Section—			
Gatun	.38	5	0.96
*Brazos Brook	.67	1	1.95
Cristobal	1.54	1	2.93
Porto Bello	3.47	5	4 81

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—value midnight to midnight. †To 5 p. m., September 7.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, September 9, 1911. All heights are in feet above mean sea level.

Day and Date.	Station.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Sept. 3	126.4	93.0	46.8	15.4	15.3
Mon., Sept. 4	126.2	92.8	46.6	15.2	15.2
Tues., Sept. 5	127.4	93.7	47.2	15.0	15.0
Wed., Sept. 6	127.0	93.6	47 1	15.0	14.8
Thurs., Sept. 7	126.3	93.0	46.6	14.8	14.8
Fri., Sept. 8.	127.8	93.7	46.7	14.8	14.6
Sat., Sept. 9	127.5	93.7	47.0	14.8	14.5
Height of low water	125.0	92 0	44.0		

OFFICIAL CIRCULARS.

Record of Oil Issued.

CULEBRA, C. Z., September 5, 1911.

HEADS OF DEPARTMENTS AND DIVISIONS:

Circulars Nos. 314 and 314-A direct that a record of oil issued to various pieces of equipment shall be kept by each division, and a statement of same compiled monthly, copies of which shall be sent to those directly concerned, and to me.

On December 19, 1910, a circular letter to the Heads of Departments and Divisions was issued, calling attention to the above requirements of circulars Nos. 314 and 314-A, and stating further that "By January 1, 1911, all plant and equipment of the Isthmian Canal Commission and Panama Railroad Company, including stationary plants, etc., will have been given approved monthly allowances of oils, greases, and waste, and, subsequent to that date, it is desired that *two* copies of monthly reports of lubricants used on each item of equipment, plant, etc., be forwarded *promptly* at the close of each month to me."

Circular No. 290-C, prescribing the use of form No. C. E. 303 by engineers, or other employes in charge of the operation of any piece of equipment, in drawing all lubricants, etc., from division supply stations, stated also that "At the end of each month the requests filled shall be used in compiling report on forms C. E. 273-A and 273-B of lubricating oil, etc., consumed on each item of equipment."

These reports are exceedingly useful to the traveling engineers and the inspector attached to this office in their inspection of lubricant consumption. In some cases, however, certain of the divisions and departments have not forwarded any reports; in other cases, only one copy is received; and in practically all cases, there is considerable delay in forwarding these reports.

It is hoped that it will not be necessary to again invite attention to this matter, and that, in the future, these reports will be submitted promptly, and in the manner prescribed.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Telegraph Operators.

CULEBRA, C. Z., September 6, 1911.

CIRCULAR NO. 299-O:

The following designations and rates of pay are authorized, in addition to those published in circular No. 299:

Designation.	*Unit.*	*Rate of Pay.*
Operator (telegraph)	Month	$137.50
Operator (telegraph)	Month	150.00

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Surcharge to Marine Camp.

CULEBRA, C. Z., September 1, 1911.

CIRCULAR NO. 169-J (Corrected):

Effective this date, the same surcharge will apply on material and labor furnished the Marine Battalion at Camp Elliott as on material and labor furnished the Government of the Canal Zone.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

August Rainfall for Three Years.

Station.	1909	1910	1911	Station Average	Years of Record	Rai'y days 1911
Pacific Section-						
Ancon	6.84	12.00	7.21	7.61	15	19
Balboa	6.86	10.85	8.50	7.61	13	18
Miraflores	6.46	11.97	7.06	8.50	3	26
Pedro Miguel	10.07	10.08	5.43	8.72	4	29
Rio Grande	9.12	8.98	8.17	9.93	7	26
Central Section-						
Culebra	8.32	10.11	8.36	10.46	20	27
Camacho	8.03	10.75	7.98	9.87	6	27
Empire	7.20	10.08	5.98	9.62	8	26
Gamboa	7.03	10.66	7.68	12.04	29	26
Alhajuela	8.15	13.43	10.79	13.10	13	27
El Vigia	11.24	15.01	12.56	12.94	3	26
Gorgona	8.45	10.84	8.51	11.88	8	27
San Pablo	9.04	13.06	7.21	10.20	5	28
Tabernilla	9.78	11.07	8.40	10.32	5	29
Bohio	10.01	14.84	5.69	14.77	17	27
Trinidad	9.50	12.03	8.17	12.18	4	22
Monte Lirio	8.39	13.68	9.58	11.88	4	30
Atlantic Sec.-						
Gatun	9.92	13.85	7.91	14.73	6	23
Brazos Brook	10.67	13.56	12.19	14.73	6	29
Cristobal	15.42	14.93	11.60	15.13	41	27
Porto Bello	13.83	20.71	22.56	18.52	4	25
Nombre de D.	12.15	9.63	11.70	11.16	3	22

COMMISSARY DEPARTMENT.

The open hours at Culebra commissary are from 8 a. m. to 1 p. m., and from 3 p. m. to 7 p. m.; at Balboa commissary, the hours are from 8 a. m. to 12.30 p. m., and from 2.30 to 7. p. m. All other commissaries are open from 8 a. m. to 1 p. m. and 3 p. m. to 7 p. m., with the exception of the Cristobal commissary, which is open from 8 a. m. to 12.30 p. m., and from 2 p. m. to 7 p. m.

Retail prices of cold storage provisions for the week beginning September 13.

FRESH MEATS.	Price.
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24
MISCELLANEOUS.	
Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm	17
Sweetbread—Veal, per pound	1.20
Beef, per pound	25
Eggs, fresh, dozen	28
one-half dozen only	15
Bluefish, fresh, per pound	14
Halibut, fresh, per pound	15
Shads, fresh, each	70
Shad roes, fresh, per pair	35
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.25
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each	60, 70, 80, 90, 1.00
Ducks, Western, about 4½ pounds, each	1.00
Broilers, milk fed, each	60
corn fed, each	55
Turkeys, per pound	26
Squabs, each	35
Capons, each	2.10
Fryers, corn fed, each	60
Partridges, each	50
Grouse, each	.50
CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	18
Sliced, per pound	20
Half, for boiling, per pound	19
Boiled, per pound	26
Hocks, per pound	‡8
Bacon—Breakfast, whole piece, per pound	22
Breakfast, sliced, per pound	23
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30
DAIRY PRODUCTS.	
Butter—Creamery special, per pound	32
Cheese—Roquefort, per pound	38
Philadelphia cream, cake	18
Young America, per pound	18
Swiss, per pound	26
Edam, each	1.00
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**25
Buttermilk, bottle	**15
Fer-mil-lac, bottle	**25
Ice cream, quart	‡25
½-gallon	‡50
VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	6
Cabbage, per pound	3
Cucumbers, per pound	3
Carrots, per pound	*3
Cauliflower, per pound	*12
Lettuce, per pound	12
Onions, per pound	3½
Potatoes, white, per pound	4
sweet, per pound	2
Pears, alligator, each	6
Peppers, green, per pound	7
Rhubarb, per pound	†4
Turnips, per pound	*3
Tomatoes, per pound	4
Yams, per pound	3
Apples, per pound	10
Cantaloupes, each	8
Grapes, per pound	†10
Lemons, dozen	24
Limes, per 100	80
Oranges, California, per dozen	42
Pears, per pound	*7
Peaches, pound	6
Plums, per pound	*7
Watermelons, each	30

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending September 9:

Prinz August Wilhelm, September 4, from New York, with 29 cases paper, 17 bundles turnbuckles, for stock; 50 bundles castings for Mechanical Division.

Cristobal, September 6, from New York, with 150,200 bags cement for Atlantic and Pacific Divisions.

Gibraltar, September 6, from New York, with 121,900 bags cement for Atlantic and Pacific Divisions.

Santa Marta, September 7, from New York, with 21 cases fuse, 170 drums oil, 414 bags oats, for stock

Turrialba, September 7, from New Orleans, with 9 pieces yellow pine lumber and 464 pieces ties for Pacific Division; 141 pieces piling for Atlantic Division; 28,331 pieces yellow pine lumber and 219 pieces white oak lumber for Mechanical Division; 3,935 pieces yellow pine lumber, 300 drums kerosene, 934 bales hay, 75 bags sucrene feed, 15 pieces spring frogs, 200 pieces switch stands, 8 cases switch stands, for stock

Geo. W. Fenwick, September 7, from Hoquiam, Wn. with 20,589 pieces Douglas fir lumber and 2,020 cross-ties for stock.

Vimeira, September 9, from Moss Point, Miss., with 35,546 pieces cross-ties for stock.

Misdirected Letters.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Agneu, Jos. M.
Almour, G. W.
Barrow, Samuel
Bizzelle, Mrs. Emma
Brubaker, V. C.
Bruggs, William
Burrow, J. O.
Carlisle, P. B.
Clouse, Roy (2)
Collier, W. W., Jr.
Collins, Cleveland
Dale, Charles
Douglas, John
Ebdinger, Mrs. A.
Engelsberg Bros.
Foster, Frank
Goodale, Wm. A.
Hahnewald, E. R. (2d class)
James, Samuel W.
Kelly, L. W.
Lamontagne, Wilfred
Louis, Wm. N.
Maloney, John A.
McMullin, Nellie
Markham, A. V.
Martin, Mrs. A.
Marvin, William P., Sr.
Mellon, Robert
Miller, Charles C.
Moore, Miss Alice (2)
Morgali, Mr. & Mrs. Rolp
Myric, James
O'Connell, Rev. H.
Quinn, William P.
Renaud, Ernest
Rosenquist, Albert
Smith, Fred C.
Urban, A. E.
Veenschoten, Vincent V.
Wilson, Wm. T.

The following vessels arrived at, or departed from the port of Balboa during the week ending September 9:

Arrivals—September 4, *Manavi*, from Buenaventura; *Urubamba*, from Callao; *Quilpue*, from Valparaiso; *G. W. Fenwick*, *Manga Reva*, *San José*, from San Francisco.

Departures—September 4, *Ucayali*, to Callao; September 6, *Ecuador*, to Guayaquil; *Kansas City*, to San Francisco; September 7, *Newport*, to San Francisco; *Aysen*, to Valparaiso; September 8, *Chile*, to Guayaquil; September 9, *Urubamba*, to Callao.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line; the Panama Railroad Company's dates being subject to change.

NEW YORK TO CRISTOBAL.

Advance	P. R. R.	Monday	Sept. 11
Colon	P. R. R.	Monday	Sept. 18
Allianca	P. R. R.	Saturday	Sept. 23
Panama	P. R. R.	Friday	Sept. 29
Advance	P. R. R.	Thursday	Oct. 5
Colon	P. R. R.	Thursday	Oct. 12
Allianca	P. R. R.	Wednesday	Oct. 18
Panama	P. R. R.	Tuesday	Oct. 24
Advance	P. R. R.	Monday	Oct. 30

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Sunday	Sept. 17
Cristobal	P. R. R.	Sunday	Sept 17
Advance	P. R. R.	Saturday	Sept. 23
Colon	P. R. R.	Saturday	Sept. 30
Allianca	P. R. R.	Friday	Oct. 6
Panama	P. R. R.	Thursday	Oct. 12
Advance	P. R. R.	Tuesday	Oct. 17
Colon	P. R. R.	Tuesday	Oct. 24
Allianca	P. R. R.	Monday	Oct. 30
Panama	P. R. R.	Sunday	Nov. 5
Advance	P. R. R.	Saturday	Nov. 11

NEW YORK TO COLON.

Metapan	U. F. C.	Thursday	Sept. 7
Prinz Joachim	H.-A.	Saturday	Sept. 9
Zacapa	U. F. C.	Thursday	Sept. 14
Prinz Eitel Friedrich	H.-A.	Friday	Sept. 15
Magdalena	R. M.	Saturday	Sept. 16
Almirante	U. F. C.	Thursday	Sept. 21
Prinz Aug. Wilhelm	H.-A.	Saturday	Sept. 23
Santa Marta	U. F. C.	Thursday	Sept. 28
Prinz Sigismund	H.-A.	Friday	Sept. 29
Clyde	R.M.	Saturday	Sept. 30
Metapan	U. F. C.	Thursday	Oct. 5
Prinz Joachim	H. A.	Saturday	Oct. 7
Zacapa	U. F. C.	Thursday	Oct. 12
Prinz Eitel Friedrich	H.-A.	Friday	Oct. 13
Atrato	R.M.	Saturday	Oct. 14

COLON TO NEW YORK.

Santa Marta	U. F. C.	Thursday	Sept. 14
Prinz Sigismund	H.-A.	Saturday	Sept. 16
Clyde	R.M.	Tuesday	Sept. 19
Metapan	U. F. C.	Thursday	Sept. 21
Prinz Joachim	H.-A.	Tuesday	Sept. 26
Zacapa	U. F. C.	Thursday	Sept. 28
Prinz Eitel Friedrich	H. A.	Saturday	Sept. 30
Atrato	R. M.	Tuesday	Oct. 3
Almirante	U. F. C.	Thursday	Oct. 5
Prinz Aug. Wilhelm	H.-A.	Tuesday	Oct. 10
Santa Marta	U. F. C.	Thursday	Oct. 12
Prinz Sigismund	H.-A.	Saturday	Oct. 14
Thames	R.M.	Tuesday	Oct. 17
Metapan	U. F. C.	Thursday	Oct. 19

NEW ORLEANS TO COLON.

Abangarez	U. F. C.	Saturday	Sept. 9
Parismina	U. F. C.	Wednesday	Sept. 13
Atenas	U. F. C.	Saturday	Sept. 16
Heredia	U. F. C.	Wednesday	Sept. 20
Turrialba	U. F. C.	Saturday	Sept. 23
Abangarez	U. F. C.	Saturday	Sept 30
Parismina	U. F. C.	Wednesday	Oct. 4
Atenas	U. F. C.	Saturday	Oct. 7
Turrialba	U. F. C.	Saturday	Oct. 14

COLON TO NEW ORLEANS.

Turrialba	U. F. C.	Thursday	Sept. 14
Cartago	U. F. C.	Thursday	Sept. 14
Parismina	U. F. C.	Thursday	Sept. 21
Abangarez	U. F. C.	Thursday	Sept. 21
Heredia	U. F. C.	Thursday	Sept. 28
Atenas	U. F. C.	Thursday	Sept. 28
Cartago	U. F. C.	Thursday	Oct. 5
Turrialba	U. F. C.	Thursday	Oct. 5
Parismina	U. F. C.	Thursday	Oct. 12
Atenas	U. F. C.	Thursday	Oct. 12

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct leave on Thursdays at 3 p. m.; ships for New Orleans in the coastwise service on Thursdays at 4 p.m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

The Leyland line steamer *Louisianian* sails for New Orleans direct on or about September 28.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, SEPTEMBER 20, 1911. No. 4.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

A Correction.

In the issue of THE CANAL RECORD of September 13, under "Cost of concrete," the statement is made that the Atlantic Division laid 237.05 cubic yards of material per hour, and the Pacific Division 352.67 cubic yards per hour. These figures were taken from a computation made for the Chairman's forthcoming annual report, and a revision shows them to have been incorrect. The average amount of masonry laid in the locks per service hour, during the year, was, by the Atlantic Division 260.573 cubic yards of concrete and large stone; and by the Pacific Division 281.299 cubic yards.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of August is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Sale of French Scrap Material.

The sale has been authorized to the Chicago House Wrecking Company, for $215,000, of all French equipment and scrap metal in the Canal Zone that has not been taken into stock for use, or is not already in use. Bids were advertised for in the United States, and eleven tenders were received, the price offered ranging from $40,000 to that of the highest bidder, to whom the award was made. Six of the bids were for amounts less than $100,000; three for amounts between $100,000 and $200,000, and two for more than $200,000. The successful bidder agrees to pay an arbitrary rate of eight dollars a ton on the issuance of bills of lading until the total price is paid.

Included in the material sold are a number of old locomotives, dredges, excavators, dump cars, boilers, cranes, cylinders, 30 and 50-pound steel rail, scrap iron, copper, and brass. Representatives of the various bidders visited the Isthmus, and examined the material where it lay. It must be taken by the contractor from the places where it has been collected, or where it was abandoned by the French, and transported to the seaboard at his expense. A rate of $2.25 per short ton will be given by the Panama railroad for transportation to either Colon or Balboa. Most of the material that was in the Gatun Lake region has been removed, but there still remain some excavators at Tabernilla and some miscellaneous equipment at Bohio, which must be removed by the contractor before the water covers it, or be a loss. None of this material is in the Canal prism.

A statement of the net value of the French scrap sold up to July 1, 1911, is in preparation in the office of the Examiner of Accounts, and, until that is available, the exact value to the Government cannot be given. Approximately, one million dollars' worth of the material has been applied in Canal construction, however, and there have been sold in the States as scrap 17,537.23 long tons at an average gross price of $11.86 per ton.

Postal Savings System.

The President signed an Executive Order on September 8 providing for a postal savings bank in the Canal Zone. The text of the Order will be published in a future issue of THE CANAL RECORD.

Launching of the "Corozal."

The ladder dredge *Corozal* was launched at the works of the builders in Renfrew, Scotland, on September 13. After completing a working test in material similar to that which it must excavate at the Pacific entrance to the Canal, the dredge will begin its long journey under its own steam, by way of the Strait of Magellan, to Balboa. The distance is about 11,450 miles, and the voyage will take about two months.

Work in Culebra Cut.

On September 14, twenty shovels, working in the Culebra construction district of the Central Division, excavated 33,836 cubic yards of rock and earth during the working day of eight hours. The shovels were under steam 160 hours; actually at work 113 hours 20 minutes; waiting for cars 34 hours 45 minutes; other delays, aggregating 11 hours 55 minutes, resulted from mining, repairing shovel, moving shovel back, derailment, etc. The figures given above show that the average per shovel for all shovels working in the Culebra district on the day in question was 1,692 cubic yards.

Culebra Island Water Supply.

The 10,000-barrel tank now used as a water supply for the quarantine station on Culebra Island, will be replaced by one of 24,000 barrels capacity, to be built on reinforced concrete piers. A larger tank is necessary to supply the quarters on Naos Island, where the men employed on the fortification work on Flamenco Island will be housed.

COST OF EXCAVATION.

Statement of Operations for the Fiscal Year, 1910-1911.

The total amount of excavation in the Atlantic, Central, and Pacific Divisions during the fiscal year 1910-11 was 31,804,120 cubic yards. There were excavated in the Atlantic Division 6,738,513 cubic yards, of which 881,563 cubic yards consisted of material removed in the dry; 5,828,345 cubic yards were taken out by dredges working in the Atlantic entrance, and 28,605 cubic yards excavated hydraulically at Mindi. The dry excavation consisted of 475,875 cubic yards removed from the site of Gatun Locks; 125,383 cubic yards from the site of Gatun Spillway, and 280,305 cubic yards from the cut through the hills at Mindi.

The total excavation in the Central Division was 18,522,692 cubic yards, of which 16,221,672 cubic yards were removed from the Culebra section, locally known as Culebra Cut, and the remainder—2,301,020 cubic yards—from the Chagres River section.

Excavation in the Pacific Division aggregated 6,542,915 cubic yards, consisting of 462,893 cubic yards removed in the dry; 530,380 cubic yards removed hydraulically, and 5,549,642 cubic yards taken out by dredges working in the Pacific entrance. The dry excavation comprised 264,123 cubic yards removed at the Pedro Miguel and Miraflores lock sites, and 198,770 cubic yards channel excavation. The hydraulic plant removed 332,703 cubic yards from the lock site at Miraflores, and 197,677 cubic yards from the channel.

In addition to the above, there were removed in the preparation of foundations a total of 399,426 cubic yards, as follows: Gatun Locks, 152 582 cubic yards; Gatun Spillway, 32,245 cubic yards; Pedro Miguel Locks, 76,847 cubic yards; Miraflores Locks, 137,752 cubic yards.

The costs for the year, including plant charges and division expenses were, as follows:

Excavation in the dry—	*Cost per cu. yd.*
Gatun Spillway	$0.4069
Gatun Locks	0.7110
Channel, Atlantic Division	0.6010
Central Division	0.5902
Pedro Miguel Locks	0.5991
Channel, Pacific Division	0.6960
Miraflores Locks	0.7378
Hydraulic excavation—	
Mindi	0.2699
Miraflores Locks	0.5486
Channel, Pacific Division	0.6106
Dredging excavation—	
Atlantic Division	0.2215
Pacific Division	0.2519
Preparation for foundations—	
Gatun Spillway	1.5048
Gatun Locks	1.5540
Pedro Miguel Locks	2.3746
Miraflores Locks	1.6085

Repairs to the "Allianca."

It is expected that repairs to the *Allianca* will not be completed until October 1, and its sailing of September 23 from New York is, therefore, cancelled. If the repairs are com-

NOTES OF PROGRESS.

(Continued.)

pleted the *Allianca* will leave New York on October 5, taking the place of the *Advance*, which will sail on October 18. If the repairs are not completed in time for this arrangement, the *Advance* will continue on its schedule, and the *Allianca* will sail from New York on October 18.

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of August, 1911, follows:

DESTINATION.	Number Cars.	Cubic Yards.
Pacific Division	2,669	40,035
Central Division	32	5 8
Atlantic Division	15	361
Quartermaster's Department	3	70
Panama railroad	7	175
Miscellaneous	25	405
Total	2,751	41,574

Hydraulic Excavation Increasing.

Nearly 150,000 cubic yards of material were removed from the lower lock at Miraflores, and from the Canal prism south of it, by the Pacific Division hydraulic equipment during the month of August, the exact amount being 149,926 cubic yards. This is by far the largest month's output since the installation of the plant, and represents over one-fifth of the hydraulic excavation so far accomplished in this section up to September 1, viz., 750,078 cubic yards. The bulk of the material was taken from the Canal prism, south of the locks, and was comparatively free of the gravel which was so prevalent at the lower lock site.

Three dredge pumps were kept in commission, two in continuous operation, during the month, lifting the disintegrated material from sumps, after it had been washed loose and broken up by streams from the monitors. One pump forced material into the core fill of the west dam, and 25,000 cubic yards were handled in this way. This pump operated at one side of the lower lock, and its sump was diked in, so as not to interfere with the steam shovel operations in progress directly opposite. The balance of the material was forced upon the flats near the Rio Grande diversion, east of the Canal. The land there has been raised to elevation +15, and, to prevent the mud from flowing into and blocking the Rio Grande, wooden barriers have been constructed. A pipe line is being laid to extend operations to the low ground further south, where there is a greater area to be filled.

The main sump in connection with hydraulic operations in the prism, south of the locks, will be situated a little north of the pumping plant, close to the west bank. This sump was excavated, 18 by 22 feet, to elevation —50. Here, the relay pump, originally designed to work in connection with the west dam fill, has been set up, thereby relieving one of the dredge pumps, which will be sent to shop for a general overhauling. Upon being excavated, the sump was partly filled with selected material—rock screenings and sand, as a protection against boulders in the surrounding material. The relay pump will operate from a series of benches on the side of the sump, so that as the excavation increases in depth, the location of the pump can be correspondingly changed to suit the different levels. The soil in this part of the prism is mixed with a large amount of buried tree débris. This is collected into piles, and, although sodden, is forced to burn by running a compressed air pipe underneath the pile, and turning on a jet, which operates as a forced draft.

In the open water channel, which begins a short distance south of the site of present operations, nothing can be done hydraulically until a coffer dam is thrown across it. The material for this dam is mostly on the ground, and the work of constructing it will be started in the next two weeks. The water in the lake thus formed will be lowered to the point where the monitors and pumps can work advantageously.

CONCRETE WORK IN THE LOCKS.

Over 65 per cent of the concrete for all the locks is in place, the amount at the close of the work on September 16, being 2,732,195 cubic yards, out of a total of approximately 4,199,400. A total of 31,046½ cubic yards of concrete was laid in the locks during the week ending September 16.

GATUN LOCKS.

About 80 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on September 16, being 1,596,370 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending September 16, and of the total, follows; and a similar statement for the work in the Spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
September 11	1,808	30.39	6	202	6.40	2	72	2,082
September 12	1,740	26.38	6	252	6.40	2	86	2,078
September 13	1,680	26.46	4	440	7.40	2	84	2,204
September 14	2,096	33.40	6	210	6.40	2	136	2,442
September 15	1,658	30.46	4	332	7.40	2	112	2,102
September 16	1,692	26.04	4	310	7.40	2	78	2,080
*Portable mixers	....	....	.....	417½	....	.....	....	417½
Total	10,674	174.33	4	2,163½	43.00	2	568	13,405½
Previously reported	....	....	.....	....	....	.....	....	1,582,964½
Grand total	....	....	.....	....	....	.....	....	1,596,370

*The 417½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days: September 11th, 55; September 12th, 76½; September 13th, 78½; September 14th, 78; September 15th, 69; September 16th, 60½.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 86 per cent completed, 722,989 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on September 16. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			⅓-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
September 11	490	14.00	3	175	9.33	3	....	665
September 12	450	14.00	3	81	4.50	1	....	531
September 13	532	16.00	3	160	9.83	3	....	692
September 14	530	14.00	3	36	1.75	1	....	566
September 15	508	13.50	3	....	....	.....	....	508
September 16	634	18.00	3	....	....	.....	....	634
Total	3,144	89.50	3	452	25.41	1.33	....	3,596
Previously reported	....	....	.....	....	....	.....	4,411	719,393
Grand total	....	....	.....	....	....	.....	4,411	722,989

MIRAFLORES LOCKS.

Over 30 per cent of the concrete for the system of two twin locks at Miraflores was in place on September 16, the total amount on that date being 412,836 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			⅓-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Sept. 11	836	19.00	5	148	13.50	3	1,254	15.93	2	....	2,238
Sept. 12	622	16.50	4	116	11.00	2	1,108	16.33	2	....	1,846
Sept. 13	1,080	30.33	6	103	8.00	1	1,230	15.90	2	....	2,413
Sept. 14	1,362	32.33	6	116	16.50	2	1,322	16.50	2	....	2,800
Sept. 15	1,108	26.17	6	135	10.25	2	1,204	15.00	2	....	2,447
Sept. 16	1,014	27.00	5	205	16.75	3	1,082	13.41	2	....	2,301
Total	6,022	151.33	5.3	823	76.00	2.01	7,200	93.07	2	....	14,045
Previously reported	....	....	.....	....	....	.....	....	....	.....	3,693	398,791
Grand total	....	....	.....	....	....	.....	....	....	.....	3,693	412,836

RECRUITING LABORERS.

Upward of 1,300 Brought to Isthmus Within Past Three Months.

Nearly 1,000 contract laborers have been recruited in the Antilles during the past three months for work on the Canal. Most of these came from the islands in the neighborhood of Barbados, but only a few of them were Barbadians, because the island government has prohibited further recruiting there. The headquarters of the Commission's recruiting agent, however, has been maintained at Bridgetown, the capital of Barbados, and most of the laborers took ship from that port. It was intended to recruit a full 1,000 men, but the contingent that arrived on the Isthmus on September 3 will probably be the last, as the total is but a few short of the desired number, and the labor supply is no longer short. During the month of July, 195 men were brought to the Isthmus in two lots, consisting of 49 and 146 men, respectively; in August, 507 in two lots of 271 and 236, respectively, and, on September 3, there arrived another lot of 239 men, making a grand total of 941.

In addition to the above, 249 laborers have recently been recruited from Fortune, Turk's, and other islands in the Bahama group for work on the Panama railroad relocation, and at other points. The Panama railroad steamship *Advance* brought 43 at one time, and 56 at another; the *Prinz Sigismund* of the Hamburg-American line, had 70 on board on its last trip, and the *Cristobal* landed 80 on September 6. These men were recruited under an arrangement with a man named Mora, who is known throughout the Bahamas as the "King of Fortune Island." He furnishes the men at a stated price per head, and sends his sloops among the neighboring islands to pick them up. The recruits are unusually robust, make excellent workmen, and those selected for the Canal work are nearly all young men, or men in their prime. The majority are direct descendants from their African forebears, and, therefore, differ from a great many of the inhabitants of the West Indies, inasmuch as they are more than usually free from mixed blood.

A few Peruvians, numbering 27 in all to date, have been added to the Canal force. They come under no contract with the Commission, and pay their own way, but are given work as soon as they report.

Civil Service Examinations.

Examinations will be held, probably on October 22, for the following positions. Agricultural inspector, Philippine service; assistant observer, Weather Bureau service; civil engineer, Departmental and Philippine services; civil engineer and draftsman, departmental service; cadet engineer and cadet officer, Lighthouse service; electrotyper-finisher, electrotyper-molder, and stereotyper, Government Printing Office; mechanical draftsman and topographic draftsman, Isthmian Canal service; engineer, Indian service; pharmacist, Public Health and Marine Hospital service; printer, Government Printing Office; surveyor, Philippine service; trained nurse, Isthmian Canal, Indian, and Philippine services; wireman, departmental service.

Women will be admitted only to examination for the position of trained nurse.

Applications will not be received after September 29 for the above examinations. The kind of examination desired should be stated in requesting information in regard to any of the above.

In answer to the question in application forms as to *bona fide* residence, applicants are required to show residence *up to the date of application.* It is to be noted that *bona fide* residence does not require continuous bodily presence, but refers to the place at which an applicant, if a voter, is legally entitled to vote.

JOHN K. BAXTER, *Secretary,*
Isthmian Civil Service Board.

CULEBRA, C. Z., September 14, 1911.

Boy Scouts.

Seventy-five boy scouts, accompanied by four leaders and five scout masters, made an excursion to Old Panama on Labor Day. Two special cars attached to the southbound morning train brought the boys from Colon and the intermediate stations. The "hike" out, about eight miles, was made in two hours and a half and the day was spent on the beach in scout games and practice. Dinner was cooked by the boys. The boy scouts have been organized on the Isthmus one year. They are divided into patrols of eight, and two or more patrols form a troop. Each patrol has a scout leader elected from its number, and each troop has a scout master, who is elected by the managing council, called the Isthmian Scout Council. The organization is affiliated with the National Boy Scouts of America.

Up to the present time, the local troops have made their "hikes" into the nearby country, accompanied by their leaders and masters, but, at a recent meeting of the council, it was decided to hold one general outing a month, when all the troops would meet at some central place, proceeding thence to the point decided upon.

The majority of the Zone scouts have passed through the "tenderfoot" class, and are second-class scouts. Any boy scout leaving the Isthmus will be passed into any troop in the States in the class in which he stands on leaving.

Hebrew Benevolent Society—New Year 5672.

Services will be conducted at the Sojourners' lodge room, Colon, on Friday evening, September 22, at 6.30 o'clock, and on Saturday morning, September 23, beginning at 8.30 o'clock. All Jewish residents of the Canal Zone are cordially invited.

Death of James J. Riley.

James J. Riley, aged 29 years, a sailor on the *Newport News,* born in Boston, Mass., was struck by a switch engine in the railroad yard at Colon on the morning of August 31, and killed. Information is desired with regard to his home or relatives, in order that they may be informed of his death.

Ancon Rifle Club.

As a result of a meeting held on September 17, the organization of the Ancon Rifle Club was completed, and it was decided to make application for a charter, and to affiliate with the National Rifle Association of America. Further information may be obtained by addressing the secretary, Wm. J. Ergenzinger, Ancon.

August Weather.

The general deficiency in rainfall in the Canal Zone continued during the month of August. The average temperatures for the month, at all stations, were the highest of record, while the mean atmospheric pressure at each of the stations was the lowest of record.

PERSONAL.

Lieutenant-Colonel C. A. Devol, accompanied by his wife and daughter, sailed on the *Panama* on September 17, on his annual leave of absence.

Mr. S. B. Williamson, accompanied by his daughter, sailed on the *Panama* for New York on September 17, on annual leave.

Mr. Edward J. Williams left the Isthmus on his annual vacation leave on September 16.

Mr. J. A. Smith will arrive on the *Colon* on September 24 from his annual vacation in the States.

Mr. C. M. Saville, accompanied by his wife and son, left on the *Cristobal* on September 17, for his annual leave in the States.

Among the passengers on the *Advance,* which arrived at Cristobal on September 17, were Mr. T. C. Clear and wife; Major John C. Oakes, Corps of Engineers; and Captain L. D. Cabell of the Quartermaster's Department, U. S. A.

Pilots, Mates, Masters, Chauffeurs.

Examinations for pilots, mates, and masters; and for chauffeurs, will be held by the Board of Local Inspectors at Ancon, C. Z., on September 27. All applicants for examination should be present at 8 a. m.

Gorgona Catholic Club.

The Gorgona Catholic Club held a banquet at the I. C. C. hotel on Saturday evening, September 16, in honor of the Rev. Father Rojas, pastor of the Gorgona Catholic Church. The club was organized in May, 1911, and now has 60 members.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 69 per cent completed, 155,522 cubic yards, out of a total of 225,000, having been placed at the close of work on September 16. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
September 11..........	152	7.00	1
September 12..........	140	7.00	1
September 13..........	160	10.30	2
September 14..........	156	10.30	2
September 15..........	168	8.00	1
September 16..........	176	8.00	2
Total..............	952	51.00	1.50
Previously reported...	154,570		
Grand total..........	155,522		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending September 16, follows:

DATE.	Hours worked.	Cubic Yards.
September 11....................	4.24	1,618
September 12....................	3.08	1,121
September 13....................	4.25	1,887
September 14....................	3.43	1,486
September 15....................	4.22	1,758
September 16....................	3.59	1,603
Total	24.01	9,473

Sailing of the "Ancon."

The steamship *Ancon* will sail from dock No. 11, Cristobal, for New York on Thursday, September 28, at 3 p. m.

CANAL WORK IN AUGUST.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., September 15, 1911.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of August, 1911.

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	87 599	1,454,322	156,633	1,698 554
Work excavation, wet	Cubic yards	367,456	9,972	630,241	1,007,669
Total work excavation	Cubic yards	455,055	1,464,294	786,874	2.706 223
Plant excavation, dry	Cubic yards	....	....	....	....
Plant excavation, wet	Cubic yards	....	....	....	....
Total plant excavation	Cubic yards	....	....	....	....
Total Canal excavation	Cubic yards	....	....	....	....
Material placed in dams	Cubic yards	491,815	....	122,015	615,830
Concrete placed in locks and dams	Cubic yards	71,978	....	77,739	149,717
Explosives used	Tons (Gross)	76 88	248.37	34.65	359.90
Rock drilled	Feet	54,565	417,709	104.510	576,784
Tracks removed	Miles	....	12.87	....	12.87
New tracks laid	Miles	2.12	18.00	5.87	25.99
Rock crushed	Cubic yards	41,826	....	58,962	100,788
Cement used	Barrels	74,128	350	80,324	154,802
New roads built	Miles	0.56	....	....	0.56
Water mains laid	Feet	4,396	973	4,913	10.282
Sewers laid	Feet	716	104	215	1,035
Open drains and ditches dug	Feet	64,318	591	18,402	83,311
Average daily force	....	7,303	8,163	4,885	20,351
Average rainfall	Inches	9.75	7.50	6.96	7.79

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

As stated in the report for the month of July, the material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work is being done by the division engineers. The field work consisted of valve tests at Gatun, experiments of flow of water through different sized orifices, and the inspection of buffer castings under fabrication at the Gorgona shops.

Lock Gates and Protective Devices—Up to August 20, a total of 31,738 tons of material had been accepted at the mills, 2,482 tons having been fabricated in the shops during the month. Up to August 20, a total of 12,759 tons of this material had been shipped to the Isthmus.

The first eight leaves for Gatun and Pedro Miguel upper guard gates, 54 feet 8 inches high, have been completed in the shop and shipped. Eight of the 77-foot leaves for the upper and middle gates of upper Gatun Lock are within three per cent of completion, and over fifty per cent of this material has been shipped to the Isthmus. Of the upper and middle gates at Pedro Miguel, 79 feet high, 45 per cent of the shop work has been completed, although but 40 per cent has so far been accepted, and a very small percentage shipped to the Isthmus.

At Gatun, one leaf of the upper guard gate of the upper lock has been erected to its full height, and about 90 per cent of the sheathing plates have been fitted in place, and 20 per cent of the riveting done. The other leaf in the same lock has been erected to its full height, with the exception of the top girder. All interior framing, with the exception of the top panel, has been riveted in place. On these two leaves, about 75 per cent of the sheathing plates have been fitted and erected, and 16 per cent of the riveting done. The corresponding leaves in the twin lock have been erected to the height of seven panels, and sheathed up to the sixth panel. Riveting has just commenced on these leaves.

Erection work has been started at Pedro Miguel on the four 54-foot 8-inch leaves of the upper guard gates, the bottom girders for three leaves having been placed in the lock chambers. The fourth leaf of this size gate has been erected seven panels high, with the interior framing fitted in place, but not riveted.

Satisfactory progress has been made in the erection and adjustment, as well as in the babbitting, of the nickel steel bearing plates in the hollow quoins at both Gatun and Pedro Miguel.

Inspection of Operating Machinery and Electrical Equipment—The inspection force under this subdivision reporting directly to this office has cared for the technical matters relating to inspection, as follows:

(1) For the Stoney gate and cylindrical valve machines to be tested at the works of the manufacturer, purchased under Circular 614—Less rapid progress was made than during the preceding month, the delay having been occasioned by tardy delivery of material on suborders. The last of the motors, which are to be subjected to competitive test under this circular, were shipped from the factory during the month. Foundation bolts and washers for the above have arrived on the Isthmus, and have been inspected, and it is anticipated that installation will begin during the month of September.

(2) For the rack railway and other material purchased under Circular 619—The manufacture of this material has progressed satisfactorily, with the exception of the rack section, trouble being experienced by the manufacturer in casting the same. To date, no award has been made on classes 4, 5, and 6 of this circular.

(3) For the gate operating machines, class 1, and miter forcing machines, class 2, purchased under Circular 627—Inspection of the sample machines of the first class is just commencing; progress on the sample machines of the second class is making rapid advancement, and will likely be completed during the month of September.

(4) For the gate and girder hoisting machinery for the emergency dams—The organization is being planned to include this inspection as the need shall arise. The drawings required to be submitted by the contractor are nearing completion, and will be submitted for approval in the near future.

Emergency Dams—The work under this subdivision in the United States has consisted principally in the checking of shop drawings made by the contractor, a total of 137 drawings having been approved up to August 23. Of the construction work in connection with the emergency dams, 43 patterns of the various castings were completed, and patterns for 27 additional castings were in course of preparation.

AIDS TO NAVIGATION.

During the month, 133 acres of land were cleared in the vicinity of Frijoles and Mamei for sights for beacons and reference buoys; 40,050 linear feet of trochas were cut, and the necessary land for making surveys cleared and profile taken. Twelve gas buoys were located and referenced between Bohio and Caimito; three beacons were located and referenced between San Pablo and Caimito; and two lights were located at Balboa.

Atlantic Division.

GATUN LOCKS.

Excavation—Crane excavation in the lower lock, and shovel excavation for obtaining clay for back fill, were continued. A total of 594 cubic yards of material was removed by crane and hand, and 20,100 cubic yards by shovel. On August 31, the total excavation amounted to 5,909,939 cubic yards, of which 5,036,519 cubic yards were removed from the prism. The excavation in the locks was 99.78 per cent completed.

Back fill—Back filling behind the side walls of the upper, middle, and lower locks, and in the center wall of the upper lock, was continued. The quantity placed during August aggregated 78,850 cubic yards, increasing the total to 685,467 cubic yards. On August 31, the back filling was 42.25 per cent completed

Receiving and Issuing Material—The consumption of rock, sand, and cement during the month exceeded the receipts by the following respective amounts: 18,392 cubic yards, 3,110 cubic yards, and 19,888 barrels.

Mixing and Placing Plants—Both plants, and all portable mixers, were kept in satisfactory operation during the month.

Power Plant and Pumps—The operation of the power plant and pumps was satisfactory.

Iron and Steel Work—During the month, 343.3 tons of fixed steel, 82 tons of reinforcing rails, and 35,462 feet of reinforcing rods were placed, and 300 linear feet of electrical track were laid.

Concrete Work—There was a decrease of 4,117½ cubic yards in the amount of concrete laid, as compared with the figures for the preceding month. The daily average for the 27 working days was 2,478 cubic yards, as compared with a daily average during July of 2,842 cubic yards. The total amount of concrete placed during the month was 66,928 cubic yards, including 4,416 cubic yards of large stone. The bucket measurement exceeded the place measurement by 374 cubic yards. Of the total concrete, 4,562 cubic yards were placed in the upper lock, 17,608 cubic yards in the middle lock, and 44,758 cubic yards in the lower lock. The concrete work for the entire lock system was 78.13 per cent completed at the end of August.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)..	11.29	8.50
Average number of hours per day worked, per strand of cableway laying concrete and large stone (actual working time)........................	6.06	....
Average number of mixers per day..........................	7.00	2.00
Average hourly output per mixer (actual working time) cu. yds.	59.47	61.81
Average amount of concrete and large stone laid per hour, per strand of cableway (actual working time) cu. yds........	31.35	....
Large stone laid, cu. yds........	3,456	960
Concrete laid, cableways, cu.yds.	37,902	....
Concrete laid, through chute into dump cars, cu. yds........	9,430	....
Concrete laid, derricks, cu. yds.	....	4,376
Concrete laid, dump cars, cu yds	....	9,088
Concrete laid, portable mixers..	....	2,090
Total amount of concrete and large stone laid, cu. yds..	50,788	16,514

GATUN DAM.

Construction during the month increased the total fill, as determined by cross sections of the material in place, by 491,815 cubic yards, making the total amount in place 15,311 792 cubic yards.

Hydraulic Fill—The dredges increased the hydraulic fill by 259,389 cubic yards. The total hydraulic fill in place August 31 was 7,996,328 cubic yards.

Dry Fill—Material received from the Central Division and steam shovel No. 134, amounting to 232,426 cubic yards, was placed on the north and south toes of the Dam, east and west of the Spillway, making the total dry fill in place 7,315,464 cubic yards.

GATUN SPILLWAY.

Excavation—In preparing foundations of the Spillway dam, 742 cubic yards of rock were removed by hand. On August 31, the total Spillway excavation amounted to 1,585,608 cubic yards.

Concrete—The work of placing concrete was continued, the amount placed during the month aggregating 5,050 cubic yards, which increased the total to 155,731 cubic yards. The concrete work for the Spillway was 68.8 per cent completed.

Hydroelectric Plant—On August 15, excavation was commenced on the site of the power house, and continued to the close of the month, 20,625 cubic yards of earth being removed.

HARBOR AND CHANNEL SECTION.

Excavation Below Sea Level at Mindi—During the month, two steam shovels removed 20,728 cubic yards of earth and 44,313 cubic yards of rock from the Canal prism.

Dredging from the Ocean to Mindi—Five dredges removed 324,156 cubic yards of earth and 43,300 cubic yards of rock from the Canal prism. In addition, dredge *No. 86* placed 4,989 cubic yards of material in the Colon fill, which was completed on August 4. On August 31, forty feet of water could be carried from zero to zero plus 2,000 feet; 35 feet to mile 3 plus 3,600 feet; 30 feet to mile 4 plus 650 feet; 20 feet to mile 5 plus 2,438.9 feet, at the junction with the French canal.

WEST BREAKWATER, COLON.

Forty-eight thousand four hundred and twenty-one cubic yards of rock were excavated, of which amount 44,958 cubic yards were placed in the breakwater, and 3,463 cubic yards in track fill. The double track trestle was extended 647 linear feet. On August 31, the trestle extended 6,619 feet from shore. The total amount of rock dredged and dumped on the west breakwater to August 1, 1911, was 643,877 cubic yards. During the month, 43,300 cubic yards were dredged and dumped, increasing the total to 687,177 cubic yards. The amount of dry fill placed to September 1 was 454,490 cubic yards.

PORTO BELLO.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working days—hours...........	8.00
Average number of hours worked per day..	3.98
Average number of cubic yards per hour of working day...........................	193.60
Average number of cubic yards per working hour................................	389.30
Maximum day's output, (5 hours 23 minutes) cu. yds.............................	2,176.00
Average day's output (27 days) cu. yds.....	1,549.00
Average hourly output, (209 hours 10 minutes) cu. yds..........................	200.00
Total output for the month, cu. yds........	41,826.00

SAND, STONE, AND CEMENT SERVICE.

In connection with this service, plant steamed 6,250 miles, handled 625 barges, and carried 2,240 passengers.

NOMBRE DE DIOS.

During the month, 55 barges, containing 27,788 cubic yards of sand, were shipped to Gatun.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended, as required to facilitate construction work.

Central Division.

During the month of August, the total amount of material excavated in the Central Division was 1,464,294 cubic yards, of which 191,485 cubic yards were classified as earth and 1,272,809 cubic yards as rock. Of this quantity, 1,442,402 cubic yards were removed by steam shovels, and contractors removed 9,972 cubic yards by sluicing; and 11,920 cubic yards by hand. The total—1,464,294 cubic yards—consisted of primary excavation for the Canal prism.

The daily average number of steam shovels at work during the month was 40.66, and the total number of shovel days was 1,098, as compared with 40.70 shovels at work during the month of July, with 1,017½ shovel days.

For comparison with the work done by steam shovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work	Working days.	Av. yards per shovel day.
		Rock.	Earth			
1910:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
Aug....	1 602 738	1,174,446	428,292	44 63	27	1,330.10
1911:						
Aug ...	1,442,402	1,269,309	173,093	40 66	27	1,313.66

Rainfall at Empire: 1910, 10 08 ins.; 1911 5.98 ins.

The above table shows the average output per shovel to have been 0.12 per cent greater in August, 1910, than in the corresponding month of the present year.

The total amount of material excavated from the prism in the Culebra section of the Central Division in August, 1911—1,442,402 cubic yards—was the highest record in that section for the month of August, the previous high record for the month having been in August, 1910, when 1,377,714 cubic yards were removed.

The total estimated amount of material to be removed in the Central Division, according to the revised estimate of July 1, 1911, was 101,801,296 cubic yards, and up to September 1, 1911, 80,162,646 cubic yards had been removed, leaving 21,638,650 cubic yards to be removed in order to complete all excavation in the Central Division. From these figures, it will be seen that 78.74 per cent of all excavation in the Central Division had been completed up to the close of the month of August, and 21.26 per cent remained uncompleted.

Considering the two sections which compose the Central Division, the excavation completed, and that to be completed, at the close of August operations was, as follows:

CULEBRA SECTION.	*Cu. Yds.*
Completed...........................	68,295,100
To be completed.....................	21,148,905
CHAGRES SECTION.	*Cu. Yds.*
Completed...........................	11,867,546
To be completed.....................	489,745

From the above figures, it will be seen that the Culebra section, locally known as the "Culebra Cut," was 76.35 per cent completed, with 23.65 per cent to be completed; the Chagres section was 96.04 per cent completed, with 3.96 per cent to be completed.

During the month, 37,708 cubic yards of material were hauled from the Canal prism and dumped in the embankment for the roadbed of the relocated Panama railroad. The total amount of spoil from the Central Division used for this purpose at the close of the month, was 3,921,311 cubic yards. The Central Division also delivered at Gatun 235,231 cubic yards of rock and earth for use in the construction of the Dam, making the total for this purpose at the end of August, 4,228,067 cubic yards.

The daily average number of laborers at work on the whole division during the month was 7,366, and the daily average number of gold employes was 797.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

Excavation—The total excavation during the month amounted to 156,633 cubic yards.

Filling and Embankment—During August, 24,812 cubic yards of dry filling were added to the prism of the west dam at Pedro Miguel, increasing the total amount of material in place at the close of the month to 300,529 cubic yards. The back fill at Pedro Miguel was increased by 22,088 cubic yards, the total in place at the end of the month amounting to 320,118 cubic yards.

At Miraflores, 72,203 cubic yards were added to the dry fill in the toes, and 25,000 cubic yards to the hydraulic fill in the core of the west dam, making the totals at the end of the month 943,117 cubic yards, and 632,689 cubic yards, respectively. The back fill was increased by 6,117 cubic yards, the total aggregating 181,058 cubic yards at the end of the month.

Pedro Miguel Locks—The general back filling behind the west wall was continued, as was also the filling in of the middle wall. The McClintic-Marshall Construction Company commenced erection of the upper lock gates on August 7.

Concrete Work—The total amount of concrete and large stone laid at Pedro Miguel was 20,736 cubic yards, as compared with 19,906 cubic yards during July. The concrete was placed, as follows: Six thousand five hundred and seven cubic yards in the east wall; 6,593 cubic yards in the west wall; 6,484 cubic yards in the center wall; 202 cubic yards in the floors; and 950 cubic yards in the southwest wing wall.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT PEDRO MIGUEL.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)..	8.00	8.00
Average number of hours per day, worked laying concrete and large stone (actual working time)	4.11	5.17
Average number of mixers per day	....	5.15
	Cu. Yds.	*Cu. Yds.*
Average hourly output per mixer (actual working time)...	....	28.13
Average amount of concrete and large stone laid per hour, per chamber crane (actual working time)	41.92	....
Large stone laid	....	....
Concrete laid	4,650.00	16,086.00
Total concrete laid	4,650.00	16,086.00

Permanent plant consisted of two chamber cranes, placing. No mixers.

Auxiliary plant consisted of three 2-cubic yard mixers, and a daily average of 2.19 ½-cubic yard mixers, A daily average of 2.07 ½-cubic yard mixers discharged directly into forms, balance of concrete placed by chamber cranes, and with locomotive cranes and derricks, averaging 3.07 units daily.

Miraflores Locks—The McClintic-Marshall Construction Company commenced the erection of berm crane "E" on the east berm of the locks. Chamber crane No. 4 was placed in operation August 2 laying concrete in the middle wall. Dry excavation in the lower lock was continued, and steam shovel excavation for the solid portion of the upper guide wall was completed. Filling was continued in the east and west toes of the west dam. During the month, the amount of iron placed aggregated 306,073 pounds.

Concrete Work—The total amount of concrete and large stone laid was 57,003 cubic yards, as compared with 32,840 cubic yards during July. The concrete was placed, as follows: Five thousand two hundred and thirty-nine cubic yards in the east wall; 25,498 cubic yards in the west wall; 23,730 cubic yards in the center wall; and 2,536 cubic yards in the floors.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)..	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	6.55	6.30
Average number of mixers per day	5.22	3.74
	Cu. Yds.	*Cu. Yds.*
Average hourly output per mixer (actual working time)	42.19	38.06
Average amount of concrete and large stone laid per hour, per berm, or chamber crane (actual working time)	60.28	....
Large stone laid	....	....
Concrete laid	53,285.00	3,718.00
Total concrete laid	53,285.00	3,718.00

Auxiliary plant consisted of a daily average of 1.81 ½-cubic yard mixers, discharging directly into forms, and a daily average of 1.93 2-cubic yard mixers, the output of which was placed by chamber cranes.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended, as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

	Hours.
Length of working day (hours)	8.00
Average number of hours per day (actual working time)	6.26
Average number of cubic yards crushed per hour of working day	272.97
Average number of cubic yards crushed per working hour	348.84
Total output for the month, cubic yards	58,962.00

DISTRICT NO. 2—DREDGING.

The following is a statement of the five dredges which were in operation during the month, and of the amount of material excavated hydraulically.

Dredge.	Type.	Work.		Plant.		Total.	Remarks.
		Earth.	Rock.	Earth.	Rock.		
		Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds,*	*Cu. Yds.*	
Cardenas	Dipper	33,029	9,400	7,025	....	49,454	Place measurement
Marmot	Ladder	111,408	....	....	....	111,408	Place measurement
Badger	Ladder	101,426	....	....	....	101,426	Place measurement
Mole	Ladder	9,025	4,025	....	....	13,050	Scow measurement
Culebra	Suction	212,002	....	1,259	....	213,261	Scow measurement
Total	....	466,890	13,425	8,284	....	488.599	
Hydraulic excavation	....	*149,926	....	....	....	149,926	Place measurement
Grand Total	....	616,816	13,425	8 284	....	638 525	

*Excavated from Canal prism, south of Miraflores lock site.

CHAMÉ SAND EXCAVATION.

Approximately 41,700 cubic yards of sand were excavated at Punta Chamé, and delivered at Balboa.

Relocation of Panama Railroad.

During the month, 371,076 cubic yards of material were excavated, increasing the total excavation at the close of the month to 8,225,018 cubic yards; and 396,766 cubic yards of material were placed in embankment, increasing the total for this purpose to 13,972,202 cubic yards.

The average daily number of steam shovels at work was 9.41, and the total number of working days was 27.

For comparison with the work done by steam shovels during the preceding month, and during the corresponding month of the previous year, the following table has been prepared:

Period	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'kg days.	Av. yards per shovel day.
		Rock.	Earth.			
1910:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
Aug....	250,341	86,310	164,031	7.04	27	1,318
1911:						
July....	338,760	251,930	86,830	8.72	25	1,554
Aug....	359,363	242,331	117,032	9.41	27	1,415

During the month, 954 feet of temporary trestle were driven, and work on bridges and culverts was continued. No permanent track was laid during the month, the amount of 70-pound and 90-pound track remaining at 134,698 linear feet, and 42,043 linear feet, respectively, as previously reported. The force averaged 2,285 men, in addition to those employed by contractors.

Quartermaster's Department.

LABOR.

Five hundred and seven laborers were received from Barbados during the month.

QUARTERS.

There was an increase of 700 West Indians occupying Commission quarters during the month. On account of the approaching abandonment of the Tabernilla–San Pablo district, no more assignments of married quarters will be made in that district.

BUILDINGS.

Three gangs of carpenters, and one gang of painters, were employed at Las Cascadas making the necessary repairs, alterations, and moving buildings for the accommodation of the regiment of infantry, which is expected during the latter part of September.

MATERIAL AND SUPPLIES

The value of material received from the United States during the month was $539,840.08, as compared with $909,323.75 during August, 1910. Supplies during the month were delivered by 34 steamers, the total weight of cargo aggregating 32,151 tons, exclusive of 859,744 feet, board measure, Douglas fir lumber; 680,007 feet, board measure, yellow pine lumber; 253,457 feet, board measure, white oak lumber, 663 pieces of piling, and 230 cross-ties.

Subsistence Department.

The operation of the European laborers' messes, the colored laborers' kitchens, and the line hotels showed a net profit of $4,277,89. The operation of the Hotel Tivoli showed a net profit of $1,433.34, and there was a net loss on restaurants, penitentiary, tugs, and dredges of $24.01. The net profit on subsistence operations was $5 687.22.

Department of Civil Administration.

COURTS.

During the month, 37 civil and 50 criminal cases were disposed of in the Supreme and Circuit Courts, and 60 civil and 559 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES

Money order sales for August amounted to $420,123.54, and the fees to $1,859.02. Receipts from stamp and card sales, and newspaper postage aggregated $5,978.60. The total collection of revenues made by the division was $7,617.30, and the collection on account of court fines, costs and fees, $3,135.60.

Twenty-eight vessels entered at, and 27 vessels cleared from, the port of Ancon; and 26 vessels entered at, and 24 vessels cleared from, the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 548, of whom 498 were men and 50 women. Twenty-five nations, or 49 separate states and dependencies were represented. The total number of arrests for the month was a decrease of 13, as compared with July. Thirteen convicts were committed to the penitentiary, and 15 were discharged, leaving 142 in confinement at the close of the month. The cost of guarding and subsisting the convicts was $2,978.50, and the value of their work on Canal Zone roads $2,212.05.

DIVISION OF FIRE PROTECTION.

Eight fires were reported in the Canal Zone during the month, as compared with 13 in July. The damage to Commission property was $133, and to private property $5,000.

DIVISION OF PUBLIC WORKS.

In the city of Panama the average daily consumption of water was 1,383,288 gallons and in Colon 904,907 gallons.

The usual inspection and maintenance

work of this division was performed during the month.

Department of Sanitation.

The total number of deaths from all causes among employes was 38, These were divided, as follows: From disease, 26, and from violence, 12, giving the annual average per thousand of 6.27 and 2.90, respectively.

The annual average death rate per thousand among employes for the month of August in previous years since American occupation was, as follows:

1904	13.93
1905	19.97
1906	62.12
1907	27.59
1908	11.39
1909	10.28
1910	13.04

The annual average death rate per thousand in the cities of Panama, Colon, and the Canal Zone, including both employes and nonemployes, was 20.31.

The annual average death rate per thousand for the month of August among the same class of population for previous years was, as follows:

1905	51.05
1906	64.12
1907	33.75
1908	26.65
1909	16.20
1910	19.85

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: For whites, 6.45; blacks, 6.23, giving a general average of 6.27. For the same month during 1909, the annual average death rate per thousand from disease was: Whites, 6.19; blacks, 6.10, giving a general average of 6.12, and for the same month during 1910: Whites, 5.28; blacks, 8.11, giving a general average of 7.35.

Among employes during the month, deaths from the principal diseases were, as follows: Chronic nephritis, 3; hæmoglobinuric fever, 4; lobar pneumonia, 4; malaria fever, E. A., 1; tuberculosis, 4; typhoid fever, 1, leaving a balance of 9 deaths from all other diseases, and 12 deaths from external violence.

Nineteen cases of diptheria were reported during the month, 14 from the Canal Zone, 3 from Panama, and 2 from Colon, with one death. The type of the disease continued mild, and there was a marked decrease in the number of cases treated.

No cases of yellow fever, smallpox, or plague were brought to, or originated on the Isthmus during the month.

Respectfully,

GEO. W. GOETHALS, *Chairman.*

Society of the Chagres.

The recently organized association of employes who have completed six years' service on the Isthmus will be known as "The Society of the Chagres." The emblem of the society will be a circular pin, nine-sixteenths of an inch in diameter, showing on a black background, surrounded by a narrow gold border, six horizontal bars in gold. On the back of the pin will be engraved the name of the society, the name of the member owning the pin, and the date on which the latter entered the service. On the 16th instant, seventy-five charter members had been enrolled.

Obituary.

Stephen H. Alton, employed at Porto Bello, died at Colon Hospital on September 9. He was 41 years of age, single, and had been on the Isthmus fourteen months, having come from California.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

A banquet in honor of Mr. A. B. Dickson will be held at the Empire hotel on Friday night, September 22, at 8.30 o'clock. Mr. Dickson has been promoted from secretary of the Empire clubhouse to superintendent of all the clubhouses under the Commission.

The official score for the Isthmian tenpin league up to Saturday, September 16, follows:

	Won.	Lost.	P. C.
Cristobal	12	6	.667
Empire	12	6	.667
Gorgona	12	6	667
Marines	9	9	.500
Gatun	7	11	.388
Culebra	3	15	.200

The moving picture schedule for the week of September 25 to 30 is, as follows: Monday, Corozal; Tuesday, Empire; Wednesday, Culebra; Thursday, Gatun; Friday, Cristobal; Saturday, Gorgona.

COROZAL.

A "smoker" was held in the gymnasium of the Corozal clubhouse on Tuesday evening, September 12. The program consisted of an act on the parallel bars by Bath and Kramer; a vocal solo by Mrs. Kramer; an acrobatic act by Stapleton, and Indian club swinging by Mr. Kramer. This was followed by a handcuff escape act by Messrs. Bath and Playford, and Mr. Holmes concluded the program with a fancy dancing act. Refreshments and singing ended the evening's entertainment. One hundred and fifty men were present.

CULEBRA.

A second game of chess by wireless was begun with the Porto Bello association two weeks ago. Culebra won the first game.

The volleyball game between the assistant engineers and the married men on Tuesday evening, September 12, resulted in favor of the former by the score of 3 to 2. The game on Thursday evening, between the independents and assistant engineers was won by the latter. Score, 3 to 0.

The motion picture entertainment will be given on Friday night, September 22, instead of Saturday night, as previously published.

The Gorgona bowling team took three games at bowling from Culebra on Saturday evening, as follows:

Gorgona.				Culebra.			
Otis	164	163	174	Mengel	142	135	152
Arnold	151	147	159	Driscoll	166	126	153
Orr	157	135	143	Warner	137	143	126
Sims	145	123	161	Hostetter	137	154	130
Halderman	182	157	85	Baumer	184	160	140
Total	799	725	722		766	718	701

GORGONA.

About twenty were present in "gym" class on Monday and Thursday nights of last week. Apparatus work has been taken up by both squads and, beginning with Monday, September 18, a more advanced line of work will be adopted.

In the third game contest of the bowling league on the local alleys, the home team took three games from Culebra. Following are the scores:

	1st game.	2nd game.	3d game.
Culebra	703	748	710
Gorgona.	741	839	864

EMPIRE.

The following scores of 200, or over, were bowled during the past week: Duckpins—Rodeghiero, 101, 109, 103, 107, 126; Pulsifer, 105, 101; Danielson, 116; King, 113; Grund, 102. Tenpins—Davis, 216; Giavelli, 222; Snyder, 205; Rodeghiero, 214.

The league games bowled on the local alleys on Saturday, September 16, resulted in Empire winning three games from Camp Elliott, as follows:

Empire.				Camp Elliott.			
Pinney	139	192	174	McDowell	142	133	160
Giavelli	191	194	181	Tripple	105		
Anderson	149	178	153	Clouse	178	166	146
Davis	126	142	144	Austin	139	150	123
Parkis	168	178	147	Martin	120	131	175
				Janke		156	180
Total	773	884	799		684	736	784

Owing to other entertainments during the week, the literary society will postpone the regular meeting. The next meeting will be on Friday night, September 29.

On Sunday evening, September 24, there will be informal singing at 8.30 o'clock.

On Saturday evening, September 16, J. L. Malone ex-champion pool and billiard player of the United States, gave an exhibition on the Empire tables, playing Messrs. Smith, Wood, and Sheets a 200-point game, and winning 200 to 154. At pool, Malone played Pearson and McKeever a 75-point game, the former winning 75 to 48. After the games, Malone gave an exhibition of fancy and instructive shots in both pool and billiards. About 200 men were present.

CRISTOBAL.

A "smoker" will be held on Thursday, September 28.

The subject for debate on Wednesday night, September 27, at the literary and debating club will be "Resolved, that the initiative, referendum, and recall constitute the best form of government for the State."

On Friday night, September 22, J. L. Malone, the pool and billiard expert, will give an exhibition of fancy pool and billiard playing, beginning at 8 p. m. Malone will play against three leading billiard players, combined, in the Cristobal Y. M. C. A., and also against two leading pool players.

On Saturday night, the Gorgona bowling team will bowl at Cristobal.

The scores of the Gatun-Cristobal games bowled here last week are, as follows:

Gatun.				Cristobal.			
Greene	190	158	119	Gibson	143	162	161
O'Meara	197	136	183	Thomas	126	167	148
Chamberlain	203	135	138	Burns, T.	202	168	182
Galloway	202	164	147	Bullard	177	201	162
Barte	209	189	151	Louch	126	199	205
Total	1,001	782	738		774	897	858

GATUN.

The following are the results of the league games bowled at Gatun with the Cristobal team:

Gatun.				Cristobal.			
Hodges.	189	154	138	Barrett	156	201	155
Myers	115	111		Blackburn	209	173	173
DeMoll	166	148	200	Collins	152	173	130
Severn	177	188	168	Rabbitt	140	156	198
Durand	146	142	183	Furlong	136	161	124
Carr			191				
Total	*793	743	880		*793	864	780

*Cristobal won the tie.

Married.

SNYDER-SCHUBER—At the Hotel Tivoli in Ancon on September 16, Evelyn Schuber to Alban G. Snyder, the Rev. Daniel Quijano officiating. Residence, Panama.

WALSH-TRINITÉ—On September 12, 1911, at the Immaculate Conception Catholic Church, Colon, Harry L. Walsh to Henriette R. Trinité, both of Baltimore, Md.; Rev. José P. Volk officiating. Canal Zone residence, Cristobal.

FAY-CONNOR—At Culebra on September 12, Mary Connor of South Manchester, Conn., to Arthur E. Fay of Rockville, Conn., the Rev. Father Collins officiating. Canal Zone residence, Culebra.

STAPLES-ARCHER—At Tabernilla on September 10, Edith Lulla Archer to Thomas O. Staples, the Rev. W. H. Decker officiating. Canal Zone residence, Tabernilla.

MOFFAT-McGOWAN—At Ancon on September 11, Margaret B. McGowan of Cincinnati, Ohio, to David H. Moffat, of Cincinnati, Ohio, the Rev. Daniel Quijano officiating. Canal Zone residence, Balboa.

Band Concert.

A band concert will be given by the Isthmian Canal Commission Band at Empire, C. Z., on Sunday, Sepber 24, 1911, at 6 p. m. The program follows:

1. March—*Eccentric*.....Reeves
2. Selection—*The Spring Maid*.....Reinhardt
3. Reverie—*Silent Thought*.....Morrison
4. Overture—*Morning, Noon, and Night in Vienna*..Suppe
5. Waltz—*Casino-Tanze*.....Gung'l
6. (*a*)—*Chicken Reel*.....Daly
   (b)—*Casey Jones*.....Newton
7. Romance—*A Tale of Two Hearts*.....Roberts
8. Medley of popular songs—*Remick's Hits*..Lampe
9. March—*Unter dem Siegesbanner*.....Von Blon

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Las Cascadas, C. Z., on October 1, at 6 p. m.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending September 27, 1911 (75th meridian time):

DATE.	Low.	High.	Low.	High.	Low.
	A.M.	A.M.	A.M.	P.M.	P.M.
September 21	....	2.25	8.40	2.50	9.00
September 22	....	3.15	9.30	3.35	9.50
September 23	....	3.57	10.10	4.20	10.30
September 24	....	4.40	10.53	5.00	11.10
September 25	....	5.15	11.35	5.40	11.50
September 26	....	5.52	12.15	6.20	....
			P.M.		
September 27	...12.30	6.30	12.50	6.55	......

LOST—At Culebra on September 13, a double case gold watch with Canal medal fob. Return to office of the Chairman, Culebra.

OFFICIAL CIRCULARS.

Requests for Sanitation Work.

CULEBRA, C. Z., September 13, 1911.

CIRCULAR No. 183-F-2:

Requests on the different departments and divisions for the performance of sanitary work of the kinds mentioned therein for the Department of Sanitation will, hereafter, be preferred in accordance with the following, and all existing orders inconsistent herewith are to that extent abrogated:

1. Grass and brush cutting on all new areas which have heretofore not been cut, and on areas which have not been cut for the Department of Sanitation by the Quartermaster's Department within two years shall, if the areas exceed two acres in extent, be requested on form C. E. 159, and receive my approval before the work is taken in hand.
2. All new construction work in connection with ditching and drainage, the estimated cost of which exceeds $50, performed by the construction divisions for the Department of Sanitation, shall be requested on form C. E. 159, and receive my approval before the work is taken in hand.
3. All new construction work in connection with ditching and drainage, the estimated cost of which does not exceed $50, performed by the construction divisions for the Department of Sanitation, shall be performed by the former on the request of district sanitary inspectors on form S. D. 47.
4. All maintenance work, *i. e.*, superficial ditching, clearing, repairing of drains, etc., shall be performed by the different divisions promptly on the request of district sanitary inspectors on form S D. 47.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Classified Expenditure Accounts.

EMPIRE, C. Z., September 14, 1911.

CIRCULAR No. 33:

Effective at once, the following classified expenditure accounts are authorized:

Department of Construction and Engineering-General—

351. Lighting and buoying the Canal.

(a) Construction.

To this account will be charged all labor, material, and other expenses incidental to lighting and buoying the Canal, including buoys, beacons, and lighthouses.

(b) Plant.

To this account will be charged all plant heretofore, or hereafter, purchased or used in the work of lighting and buoying the Canal; also charged with plant transferred from, and credited with plant transferred to other divisions.

Fortifications—

501. Armament of fortifications.

To this account will be charged the cost of purchase, manufacture, and test of sea coast cannon for coast defense, including their carriages, sights, implements, and the machinery necessary for the manufacture at the arsenals.

502. Sea coast batteries.

To this account will be charged all labor, material, and other expenses incidental to the construction of sea coast batteries in the Canal Zone.

H. A. A. SMITH, *Examiner of Accounts.*

Approved: GEO. W. GOETHALS,
Chairman and Chief Engineer.

Scytheman Rating.

CULEBRA, C. Z., September 18, 1911.

CIRCULAR No. 229-T:

The rate of 13 cents per hour for West Indian scythemen is hereby authorized.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Division Engineer, Pacific Division.

CULEBRA, C. Z., September 16, 1911.

CIRCULAR No. 409:

Effective September 18, 1911, Mr. John M. G. Watt will act as Division Engineer, Pacific Division, during the absence of Mr. S. B. Williamson, on leave.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Chief Quartermaster.

CULEBRA, C. Z., September 16, 1911.

CIRCULAR No. 408:

Effective September 18, 1911, Captain R. E. Wood will act as Chief Quartermaster during the absence of Lieutenant-Colonel C. A. Devol, on leave.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

In Charge of Third Division.

CULEBRA, C. Z., September 16, 1911.

CIRCULAR No. 407:

Effective September 17, 1911, Mr. Guy O. Fraser, Junior Engineer, will be in charge of the work of the Third Division of the Office of the Chief Engineer during the absence of Mr. C. M. Saville, Assistant Engineer, on leave.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Misdirected Letters.

ANCON, C. Z., September 20, 1911.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Baird, T. W.
Benjamin, Mrs. Eliza
Benson, Robey W.
Briggs, C. B.
Buck, Mrs. C. C.
Burke, Wm.
Carr, Frank L.
Connor, P. J.
Corrigan, C. P.
Croll, Harry
Gibson, John
Harris, William
Keeling, Mrs. E. A.
Kennedy, Gordon
Klenner, S. J.
Kohan, Mr.
Kozak, Otto
Lawrence, B. A.
Lensen, Mrs. Hannah
Mantooth, Anderson
McKeon, Wm.
Micel, Chas.
Palmer, Levi B. (2)
Perry, Butler F.
Post, G.
Ridenhouse, J. P.
Riebe, Burton
Sargent, Don C.
Sneed, C. D.
Stroub, Alvin
Thomas, Mrs. B. S.

Rainfall from September 1 to 16, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	.96	4	2.64
Balboa	1.51	1	3.77
*Miraflores	1.05	2	4.05
Pedro Miguel	.92	2	3.72
Rio Grande	.77	8	3.26
Central Section—			
Culebra	.78	3	2.90
*Camacho	.70	8	3.24
Empire	.64	5	2.78
Gamboa	.63	5	2.49
*Juan Mina	.91	5	3 56
Alhajuela	1.11	7	2.89
*El Vigia	1.35	12	3.77
*Gorgona	.58	5	1.92
San Pablo	.44	2	1.17
Tabernilla	.35	5	.95
Bohio	.46	1	1.34
*Monte Lirio	2.00	1	4.47
Atlantic Section—			
Gatun	.38	5	1.44
*Brazos Brook	.67	1	2.91
Cristobal	1.54	1	3.87
Porto Bello	2.47	5	†6.21

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., September 15.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, September 16, 1911. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Sept. 10.	126.2	92.8	45.9	14.6	14.5
Mon., Sept. 11	126.0	92.6	45.5	14.4	14.3
Tues., Sept. 12.	126.2	92.6	45.7	14.2	14.2
Wed., Sept. 13.	126.6	93.0	45.8	14.0	14.0
Thurs., Sept. 14	126.8	93.2	45.6	13.9	13.8
Fri., Sept. 15.	126.6	93 2	45.9	13.8	13.8
Sat., Sept. 16.	126.1	92.6	45.4	13.8	13.7
Height of low water	125.0	92.0	44.0		

Sale of Buffalo Gasoline Engine.

OFFICE OF DEPOT QUARTERMASTER,
MOUNT HOPE, C. Z., September 14, 1911.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, C. Z., until two o'clock p. m., September 25, 1911, when they will be opened in the presence of attending bidders, for one 7½ horsepower Buffalo gasoline engine, equipped with reverse lever, and weighing approximately five hundred pounds. Engine may be seen and examined on any working day between the hours of seven to eleven a. m., and one to five p. m., upon application at this office. The right is reserved to reject any or all bids. Bids must be plainly marked "Proposal to purchase one gasoline engine, to be opened September 25, 1911," and addressed to the Depot Quartermaster, Mount Hope, C. Z.

C. NIXON, *Depot Quartermaster.*

FOUND—A "B. P. O. E." card, made out to Cary P. Taylor. Address R. C. Shady, Gorgona, C. Z.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line; the Panama Railroad Company's dates being subject to change.

NEW YORK TO CRISTOBAL.

Colon	P. R. R.	Monday	Sept. 18
Panama	P. R. R.	Friday	Sept. 29
Advance	P. R. R.	Thursday	Oct. 5
Colon	P. R. R.	Thursday	Oct. 12
Allianca	P. R. R.	Wednesday	Oct. 18
Panama	P. R. R.	Tuesday	Oct. 24
Advance	P. R. R.	Monday	Oct. 30

CRISTOBAL TO NEW YORK.

Advance	P. R. R.	Saturday	Sept. 23
Ancon	P. R. R.	Thursday	Sept. 28
Colon	P. R. R.	Saturday	Sept. 30
Panama	P. R. R.	Thursday	Oct. 12
Advance	P. R. R.	Tuesday	Oct. 17
Colon	P. R. R.	Tuesday	Oct. 24
Allianca	P. R. R.	Monday	Oct. 30
Panama	P. R. R.	Sunday	Nov. 5
Advance	P. R. R.	Saturday	Nov. 11

NEW YORK TO COLON.

Zacapa	U. F. C.	Thursday	Sept. 14
Prinz Eitel Friedrich	H.-A.	Friday	Sept. 15
Magdalena	R. M	Saturday	Sept. 16
Almirante	U. F. C.	Thursday	Sept. 21
Prinz August Wilhelm	H.-A.	Saturday	Sept. 23
Santa Marta	U. F. C.	Thursday	Sept. 28
Prinz Sigismund	H.-A.	Friday	Sept. 29
Clyde	R. M.	Saturday	Sept. 30
Metapan	U. F. C.	Thursday	Oct. 5
Prinz Joachim	H.-A.	Saturday	Oct. 7
Zacapa	U. F. C.	Thursday	Oct. 12
Prinz Eitel Friedrich	H.-A.	Friday	Oct. 13
Atrato	R. M.	Saturday	Oct. 14
Almirante	U. F. C.	Thursday	Oct. 19
Prinz August Wilhelm	H.-A.	Saturday	Oct. 21
Santa Marta	U. F. C.	Thursday	Oct. 26
Thames	R. M.	Saturday	Oct. 28

COLON TO NEW YORK.

Metapan	U. F. C	Thursday	Sept. 21
Prinz Joachim	H.-A.	Tuesday	Sept. 26
Zacapa	U. F. C	Thursday	Sept. 28
Prinz Eitel Friedrich	H.-A.	Saturday	Sept. 30
Atrato	R. M	Tuesday	Oct. 3
Almirante	U. F. C.	Thursday	Oct. 5
Prinz August Wilhelm	H.-A.	Tuesday	Oct. 10
Santa Marta	U. F. C.	Thursday	Oct. 12
Prinz Sigismund	H.-A.	Saturday	Oct. 14
Thames	R. M.	Tuesday	Oct. 17
Metapan	U. F. C.	Thursday	Oct. 19
Prinz Joachim	H.-A.	Tuesday	Oct. 24
Zacapa	U. F. C.	Thursday	Oct. 26
Trent	R. M	Tuesday	Oct. 31

NEW ORLEANS TO COLON.

Atenas	U F. C.	Saturday	Sept. 16
Heredia	U. F. C.	Wednesday	Sept. 20
Turrialba	U. F. C.	Saturday	Sept. 23
Abangarez	U. F. C.	Saturday	Sept. 30
Parismina	U. F. C.	Wednesday	Oct. 4
Atenas	U. F. C.	Saturday	Oct. 7
Cartago	U. F. C.	Wednesday	Oct. 11
Turrialba	U. F. C.	Saturday	Oct. 14
Abangarez	U. F. C.	Saturday	Oct. 21

COLON TO NEW ORLEANS.

Parismina	U. F. C.	Thursday	Sept. 21
Abangarez	U. F. C.	Thursday	Sept. 21
Heredia	U. F. C.	Thursday	Sept. 28
Atenas	U. F. C.	Thursday	Sept. 28
Cartago	U. F. C.	Thursday	Oct. 5
Turrialba	U. F. C.	Thursday	Oct. 5
Parismina	U. F. C.	Thursday	Oct. 12
Abangarez	U. F. C.	Thursday	Oct. 12
Heredia	U. F. C.	Thursday	Oct. 19

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; ships for New Orleans in the coastwise service on Thursdays at 4 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

The Leyland line steamer *Louisinian* sails for New Orleans direct on or about September 28.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, SEPTEMBER 27, 1911. No. 5.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free af charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold rall. Extra copies and back numbers can be obtained from the news stands af the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting infarmation, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Canal Record Index.

The index to Volume 4 of THE CANAL RECORD, in form suitable for binding with the year's issues of the paper, will be ready for distribution shortly. It will be sent free, on application, to such persons, institutions, libraries, etc., as desire to preserve their copies of THE CANAL RECORD in book form. Application should be made to the Secretary, Isthmian Canal Commission, Ancon, C. Z.

Setting Machinery at Locks.

The work of setting machinery for the operation of the locks was begun last week by an organization reporting direct to the Assistant Chief Engineer, under whose direction will be carried on the operations of setting in the masonry of the locks and spillways locomotive tracks, chain fenders, valve machinery, gate machinery, recess covers, bridges, manhole covers, and all parts accessory to mechanical and electrical installation. The first work taken up was the preparation of foundations for the machines that will operate two of the Stoney gate valves on the west wall of the locks at Gatun. A division of duties has been arranged, whereby the forces of the construction divisions will cooperate with the erecting forces of the Assistant Chief Engineer.

The erecting force will lay practically all the rack track for the towing system, that is, the towing tracks and the part of the return tracks on the inclines between the locks. This includes also the installation of the copper rails in side conduits for the transmission of current to the locomotives. It will install the fender chain machines, including eight chains at Gatun, Pedro Miguel, and Miraflores, 24 in all; with 48 machines for lifting and lowering them, 48 centrifugal pumps for operating the hydraulically driven machines, 48 motors for operating the pumps, and 48 sump pumps.

The placing of the Stoney gate and cylindrical valves will be done by the construction divisions or, at their order, by the erecting force, but the machines for operating these valves will be installed by the erecting force. There are 116 of these machines for the Stoney gate valves, and 120 for the cylindrical valves, and one motor for each machine.

Machines for operating the miter gates will be installed by the erecting force. These include 92 mechanisms for operating the gates, and 46 for forcing the miter ends together.

The covers over the miter gate recesses will be installed by the McClintic-Marshall Construction Company, under the direction of the Assistant Chief Engineer. These will be built of steel cantilevers anchored into the masonry of the lock walls, properly braced and decked over with concrete. There will be recess covers over all the gate machines, excepting those for the lower guard gates, 12 in number, the total number of recesses to be covered, therefore, being 80. The covers are necessary in order to take the towing locomotive tracks.

Lock Operations at Miraflores.

The deepest steam shovel cut in the lower lock at Miraflores is down to 46 feet below mean sea level, or within five feet of finished floor grade. Six steam shovels are working in the pit, two of them excavating close to the upper lock sill, and construction of the floor and lateral culvert system will be begun as soon as enough material has been removed from this end. The trenches for the floor culverts will be excavated by hand, locomotive cranes being employed to lift the buckets of material into dump cars. Concrete operations in the upper lock are, at present, confined largely to the west and center walls, and to foundations of the center wall in the forebay. The east wall lacks a few feet only at the north end to complete it nearly the length of the upper lock, with the exception of the niche in it occupied by the auxiliary mixer. The iron work on berm crane "E," the last of the berm cranes to be set up at Miraflores Locks, is finished, and the electricians now have it in charge.

Increased Water Supply.

In order to increase the water supply for the city of Panama, it has been decided to lay a new 20-inch main from the Rio Grande reservoir to replace the 16-inch main now in use, and a requisition for the necessary material for the work has been forwarded. To increase the pressure, without the delay incidental to the laying of this line, it is proposed to install an additional 10-inch discharge pipe from the Cocoli pumping plant to connect with the 16-inch main, which will give two 10-inch discharge lines from the Cocoli reservoir. Heretofore, the two pumps at the Cocoli station have been pumping into one pipe, but as soon as the new main is laid, there will be one pipe for each. It is further proposed to install a 12-inch centrifugal pump, now on hand, to furnish auxiliary pressure to the water flowing through the Rio Grande main. This pump has a rated capacity of 3,500 gallons per minute against a head of 70 feet. It will take the water from the main, and discharge again into the main at some distance from the intake under an increased pressure, thus acting as a "booster" pump.

New pumping equipment has been recommended for the Cocoli station, the installation of which, it is believed, will completely relieve the present situation. This equipment is planned to consist of two motor-driven pumps capable of supplying 1,500 gallons of water per minute against a head of 300 feet. Later, this plant can be transferred to Ancon, and used to increase the facilities there, which are becoming inadequate owing to the heavy water consumption from the high pressure reservoir on Ancon Hill.

Stockade on Empire-Chorrera Road.

A stockade has been built by the Division of Public Works on the new Empire-Chorrera road, about four miles out of Empire, for the housing of the convicts, and the accommodation of their guards, during the construction of the road to the Canal Zone boundary line. The building is situated at one end of a spacious yard, irregular in shape, formed by the leveling off of the top of a knoll, and stands at an elevation of about 45 feet above the bed of the Mandingo River, which partly encircles the hill. The yard is enclosed by an 8-foot double fence, spaced four feet apart, affording a passageway for the officer on patrol. Each fence is strung with close rows of barbed wire on both sides, making four thicknesses in all, and over the top there has been placed slanting barbed wire guards to prevent the inmates from climbing out of the enclosure. The total length of the outside fence is about 700 feet.

The building is 35 by 150 feet in size, and its walls are constructed of native material; the uprights consist of young trees, felled in the vicinity, averaging eight inches in diameter, on which cross pieces of the same material, averaging four inches in diameter, have been fastened with 6-inch iron spikes. The outward sides of the walls, up to within three feet of the roof, are covered with canvas as a protection from the weather. The space between the canvas and the roof has been left open for light and ventilation, but is screened in. The interior of the building is divided into two cells, a living room for the white officers, another for the colored officers, a separate living room and office for the corporal in charge, a dining room, kitchen, an individual cell for refractory prisoners, and a store room. The cells are of equal size, 35 by 44 feet, and open upon a corridor, six feet wide, from which the prisoners pass at one end, into the dining room and at the other end

NOTES OF PROGRESS.

(Continued.)

to the yard outside. They are situated between the quarters for white and colored officers, and are provided with Standee berths in rows of three, occupying the center of the room, so that there is space to move about on all sides. The rows of berths are arranged so that they can open in each direction. Each of the cells will have sleeping accommodations for about 70 men, or a total of 140 in all, and about this number will be employed on the road. There are also outside entrances to both the white and colored officers' quarters.

Supplies will be packed on horseback from the Culebra penitentiary, and water will be pumped by hand from a nearby creek into two tanks within the stockade. The road has been completed for a little over two of its six miles of distance.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 70 per cent completed, 156,406 cubic yards, out of a total of 225,000, having been placed at the close of work on September 23. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
September 18	164	7.30	1
September 19	172	11.30	2
September 20	156	7.30	1
September 21	138	6.00	1
September 22	146	6.30	1
September 23	108	6.00	1
Total	884	45.00	1.16
Previously reported	155,522		
Grand total	156,406		

Ancon Crusher.

A statement of rock crushed at Ancon quarry during the two weeks ending September 23. follows:

DATE.	Hours worked.	Cubic Yards.
September 11	7.10	2,340
September 12	7.00	2,489
September 13	6.45	2,554
September 14	7.05	2,260
September 15	7.10	2,336
September 16	5.50	2,332
Total	41.00	14,311

DATE.	Hours worked.	Cubic Yards.
September 18	7.20	2,782
September 19	8.05	2,422
September 20	7.30	3,250
September 21	7.15	2,676
September 22	8.20	3,014
September 23	7.55	2,658
Total	46.25	16,802

Visit of Congressmen.

It is expected that a party of United States Senators will visit the Canal work during the last week of October, and the early part of November.

The Committee on Appropriations of the House of Representatives will leave New York on or about November 8 for a visit to the Isthmus, during which time it will conduct hearings on the estimates of appropriations needed for the Canal work in the fiscal year 1913.

It is expected that the House of Representatives Committee on Interstate and Foreign Commerce will visit the Isthmus during the early part of December.

Excavation Record in Culebra District.

On September 20, twenty-one shovels, working in the Culebra construction district of the Central Division, excavated 37,203 cubic yards of rock and earth during the working day of eight hours, an average per shovel for every shovel working in the district, of 1,771.6 cubic yards per day.

The shovels were under steam 168 hours; at work 121 hours and 25 minutes, and waiting for cars 33 hours and 5 minutes. The rest of the time—13 hours and 30 minutes—was lost in repairing shovels, cleaning track, cleaning dipper, mining, repairing track, moving shovel back, etc.

CONCRETE WORK IN THE LOCKS.

About 66 per cent of the concrete for all the locks is in place, the amount at the close of the work on September 23, being 2,765,774½ cubic yards, out of a total of approximately 4,199,400. A total of 33,579½ cubic yards of concrete was laid in the locks during the week ending September 23.

GATUN LOCKS.

Over 80 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on September 23, being 1,611,067½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending September 23, and of the total, follows; and a similar statement for the work in the Spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
September 18	1,630	24.26	4	80	2.40	2	154	1,864
September 19	2,068	31.46	4	472	7.40	2	90	2,630
September 20	2,270	34.44	4	476	7.40	2	80	2,826
September 21	2,054	31.10	4	342	6.40	2	144	2,540
September 22	1,580	23.40	4	358	6.40	2	94	2,032
September 23	1,962	32.24	4	232	5.40	2	144	2,338
*Portable mixers				467½				467½
Total	11,564	178.10	4	2,427½	37.00	2	706	14,697½
Previously reported								1,596,370
Grand total								1,611,067½

*The 467½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days: September 18th, 80½; September 19th, 70½; September 20th, 80½; September 21st, 71; September 22nd, 86½; September 23d, 78½.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is about 87 per cent completed, 727,086 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on September 23. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
September 18	576	18.00	3	63	3.50	1		639
September 19	444	15.00	3	221	11.40	2		665
September 20	508	11.00	3	89	4.00	2		597
September 21	894	20.00	3	125	5.17	2		1,019
September 22	500	12.00	3	93	5.00	2		593
September 23	542	12.00	3	42	2.00	1		584
Total	3,464	88.00	3	633	31.07	1.67		4,097
Previously reported							4,411	722,989
Grand total							4,411	727,086

MIRAFLORES LOCKS.

Over 31 per cent of the concrete for the system of two twin locks at Miraflores was in place on September 23, the total amount on that date being 427,621 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Sept. 18	800	21.17	5	1,162	17.67	2	234	23.00	4		2,196
Sept. 19	1,264	30.67	6	1,202	15.33	2	188	17.00	3		2,654
Sept. 20	1,254	26.83	4	1,192	14.23	2	201	17.00	4		2,647
Sept. 21	1,158	29.33	6	1,262	16.00	2	325	31.00	4		2,745
Sept. 22	1,104	25.20	6	1,042	14.70	2	257	24.00	4		2,403
Sept. 23	648	19.00	4	1,208	16.87	2	284	24.50	4		2,140
Total	6,228	152.20	5.17	7,068	94.80	2	1,489	136.50	3.83		14,785
Previously reported										3,693	412,836
Grand total										3,693	427,621

EXECUTIVE ORDERS

Establishing the Postal Savings System in the Canal Zone—Prohibiting Placing of Signs.

By virtue of the authority vested in me, I hereby establish the following Order for the Canal Zone:

Section 1. There is hereby established in the post-offices of the Canal Zone a postal savings system, to be operated without the payment of interest on the deposits, under such rules and regulations as may be now or hereafter adopted.

Section 2. There is hereby created a Board of Trustees for the control, supervision, and administration of the postal savings depository offices designated and established under the provisions of this Order, and of the funds received as deposits at such postal savings depository offices by virtue thereof. Said board shall consist of the Collector of Revenues of the Canal Zone, the Auditor of the Canal Zone Government, and the Treasurer of the Canal Zone, severally, acting *exofficio*, and shall have power to make all necessary and proper regulations for the receipt, transmittal, custody, deposit, investment, and repayment of the funds deposited at postal savings depository offices; the regulations above mentioned to be subject to the approval of the Chairman of the Isthmian Canal Commission.

Section 3. Said Board of Trustees is hereby authorized and empowered to designate such post-offices as it may select to be postal savings depository offices, and each and every post-office so designated by order of said Board is hereby declared to be a postal savings depository office within the meaning of this Order, and to be authorized and required to receive deposits of funds from the public, and to account for and dispose of the same, according to the provisions of this Order and the regulations made in pursuance thereof. Each postal savings depository office shall be kept open for the transaction of business during such hours as the Collector of Revenues shall direct.

Section 4. That accounts may be opened and deposits made in any postal savings depository established under this Order by any person of the age of ten years or over, in his or her own name, and by a married woman in her own name, and free from any control or interference by her husband; but no person shall at the same time have more than one postal savings account in his or her own right.

Section 5. At least one dollar, or a larger amount in multiples thereof, must be deposited before an account is opened with a person depositing the same; and one dollar, or multiples thereof, may be deposited after such account has been opened. Postal savings deposits will be evidenced by postal savings certificates issued in fixed denominations of $1, $2, $5, $10, $20, $50, $100, each bearing the name of the depositor, the number of his account, the date of issue, and the name of the depository office.

Section 6. Any depositor may withdraw the whole or any part of the funds deposited to his or her credit upon demand, and under such regulations as the Board of Trustees may prescribe.

Section 7. Postal savings funds received under the provisions of this Order shall be deposited with the Treasurer of the Canal Zone, under such regulations as the Board of Trustees may prescribe.

Section 8. Postal savings depository funds shall be kept separate from other funds by postmasters and other officers and employes of the postal service, who shall be held to the same accountability under their bonds for such funds as for public moneys; and no person connected with the Post-Office Department shall disclose to any person other than the depositor the amount of any deposits, unless directed so to do by the Collector of Revenues.

Section 9. That the final judgment, order, or decree of any court of competent jurisdiction adjudicating any right or interest in the credit of any sum deposited by any person with the postal savings depository, if the same shall not have been appealed from, and the time for appeal have expired, upon submission to the Collector of Revenues of a copy of the same, duly authenticated in the manner provided by the laws of the United States for the authentication of the records and judicial proceedings of the courts of any state or territory, or of any possession subject to the jurisdiction of the United States, when the same are proved or admitted within any other court within the United States, shall be accepted by the Board of Trustees as conclusive of the title, right, interest, or possession so adjudicated; and any payment of said sum in accordance with such order, judgment, or decree shall operate as a full and complete discharge of the United States and the Canal Zone Government from the claim or demand of any person or persons to the same.

Section 10. This Order shall take effect and be in force sixty days from and after this date.

Wm. H. Taft.

The White House,
September 8, 1911.

To Prohibit the Placing of Signs on Lands and Property of the United States and the Panama Railroad Company.

By virtue of the authority vested in me, I hereby establish the following Executive Order for the Canal Zone:

Section 1. It shall be unlawful for any person to construct or place any sign, bill, poster, or other advertising device on any land, building, or other structure owned or controlled by the United States or the Panama Railroad Company in the Canal Zone; and any person thus offending shall be punished by a fine of not less than five dollars, nor more than twenty-five dollars, or by imprisonment in jail not to exceed thirty days, or by both such fine and imprisonment in the discretion of the court; and every day that such sign, bill, poster, or other advertising device shall remain upon such lands or structures shall be deemed a separate offense. *Provided*, however, that this Order shall not be construed to prevent persons from advertising by means of any such advertising devices the business that they may be conducting according to law in any building or other structure upon which such advertising device is constructed or placed.

Section 2. This Order shall take effect sixty days from and after this date.

Wm. H. Taft.

The White House,
September 8, 1911.

Hebrew Benevolent Society—Day of Atonement.

Divine service will be conducted at the Sojourners' lodge room, Colon, on Sunday evening, October 1, at 6.15 o'clock, and on Monday morning, October 2, beginning at 8.15 o'clock. All Jewish residents of the Canal Zone are cordially invited.

PERSONAL.

Captain Courtland Nixon, accompanied by his mother, Mrs. J. B. Nixon, leaves on the *Zacapa* on Thursday, September 28, for New York, on his annual leave of absence.

Assignment of Teachers.

The assignment of teachers of the white schools for the school year beginning October 1, 1911, has been made, as follows:

Ancon—Jessie E. Daniels (principal), Frederika Hine, Emma M. Cobban, Virginia Best, Clara L. Voyles, Gertrude B. Hoffman, Jessie W. Clark.

Pedro Miguel—Ruth Hall (principal), Dove L. Prather, Blanche A. Bradley.

Paraiso—Grace E. Snediker.

Culebra—Mildred O. Bates (principal), Jennie M. Dunlap, Hattie L. Hawley.

Empire—Elise Cage (principal), Grace Yarborough, Jessie H. Whyte, Helen L. Daniels, Mary M. Shea, Ida O. Erickson.

Las Cascadas—Shellie M. Dunn.

Bas Obispo—Clelia D. Crespi.

Gorgona—Grace E. McCray (principal), Effie L. Powers, Marian Patterson, Marion Sukeforth.

Gatun—Charles C. Carr (principal), E. D. Christopherson, Alberta Hawley, Ida H. Bowles, Odina J. L. Frost, Cora Sessions, Annie E. Stone, Wenonah A. Whiting.

Cristobal—M. Edith Anderson (principal), Edith MacIntyre, Jessie C Pontius, Helen C. Nason, Inez Cox, Lucile Annis.

Substitutes—Georgia T. Munroe, Dora Nielsen.

School Brake Schedule.

The school brakes at the different points along the line will follow the schedule given below until further notice:

The Balboa-Ancon brake will leave Balboa at 8.30 a. m.

The Corozal-Ancon brakes will leave Corozal at 8 a. m.

The Paraiso-Pedro Miguel brake will leave Paraiso at 8 a. m.

The Las Cascadas-Empire brake will leave Las Cascadas at 8 a. m.

The first Colon Beach-Cristobal brake will leave Colon Beach at 8 a. m., and the second Colon Beach-Cristobal brake will leave Colon Beach at 8.30 a. m.

The afternoon brake service at Colon Beach-Cristobal will continue as last year.

Notice of Teachers' Meetings.

White teachers of the public schools will meet at the Ancon schoolbuilding on Saturday, September 30, at 8 a. m.

Colored teachers will meet at the Ancon schoolbuilding on Saturday, September 30, at 2 p. m.

Sailing of the "Cristobal."

The steamship *Cristobal* will sail from New York on Wednesday, October 4.

The Red Men's Social Club of Empire will give an informal dance at Kangaroo hall, Empire, on Saturday evening, September 30.

Roy E. Payne was killed in the Lake Shore yards at Cleveland, Ohio, on August 15, 1911, and George Payne, his father, who is supposed to be on the Isthmus, is requested to communicate with his family.

FORTIFICATION WORK.

Preparatory Work on Flamenco Island.

The preparatory work in connection with the fortification of Flamenco Island in Panama Bay has been begun, and about 60 men are now employed there, which number will be augmented as operations are increased. A steam shovel and a French locomotive have been landed, and the track is being laid for the shovel to begin excavating. It will dig its way a short distance up the steep side of the hill by the "switchback" method, and, upon reaching the desired position on the slope, it will excavate a bench or level, after which the rock mass will be dislodged in much the same manner as at Ancon quarry. The material thus loosened will be loaded into dump cars, four of which will be transported by barge to Flamenco this week, and will be used for filling purposes. In prosecuting operations at the summit of the island, a tramway will be built to the top over which narrow gage dump cars can be run.

The most important items of preparatory work at present, are the construction of a dock for unloading supplies, and the building of a causeway that will connect Flamenco, Perico, and Naos Islands, and eventually, all three with the mainland, by means of the breakwater. The causeway will be 20 feet wide across the top, of sufficient width for a railroad track and footpath, and will have an elevation of 20 feet above mean tide. It will be extended to Perico Island in nearly a direct line, thence along the shore of that island on a 10-degree curve until it reaches the natural sand bar crossing to Naos, which shows above water at low tide, and which will be utilized in the present work.

The dock will be in the shape of a right angle, one section paralleling the beach for a distance of 200 feet, and the other extending directly out into the sea for a distance of 150 feet. It will be faced with a concrete wall four feet thick, and, on the land side, will be filled in with selected material on a level with the railroad track to be laid along the shore. The section extending seaward parallels the proposed causeway, and will be filled in between, giving a space 110 feet wide. As the top of the dock will be only 15 feet above mean tide, and the causeway will be 20 feet, the floor of the dock will have a gradual slope. The dipper dredge *Cardenas* is now engaged in dredging out the site of the dock to bed rock, which is found at a depth of from 25 to 30 feet below mean tide. After it has finished dredging at this point, it will be set at work excavating an approach channel to the dock for a width of 200 feet, and a depth of 25 feet, for the use of tugs and barges loaded with supplies.

The employes are housed in the old buildings on Naos Island, formerly the property of the Pacific Mail Steamship Company, and alterations are being made in some of them to fit the new conditions. One of the larger buildings will be utilized for an office hotel, and kitchen on the lower floor, and for quarters for "gold" bachelor employes on the second floor. There are also two married quarters, a house for the superintendent, a barrack for laborers, storehouse, blacksmith shop, carpenter shop, etc. The machine shop, one of the largest buildings on the island, may be dismantled, its equipment having recently been disposed of at private sale. Quarters have already been provided for 60 men, and accommodations are being installed for 50 more. Telephone service has not yet been installed, but connection with the mainland will probably be effected through the submarine cable to the quarantine station on Culebra Island. Water is obtained from the tanks on the island, which will shortly be replaced with larger ones, and a tank is being set up on Flamenco to supply the equipment there. The food supplies are conveyed to the Naos Island camp by the supply boat *Chame* of the Pacific Division dredging fleet.

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending September 23, follows:

Date.	Hours worked.	Cubic Yards.
September 18	4.14	1,954
September 19	4.46	2,004
September 20	3.58	1,718
September 21	4.23	1,978
September 22	2.35	1,300
September 23	4.52	1,994
Total	24.48	10,948

Postal Business and Canal Zone Revenues.

The report of the Director of Posts for the month of August shows that there were 17,239 money orders issued, amounting to $420,193.89. Of this amount, $319,212.76 was issued payable in the United States, $100,110.13 in the Canal Zone, $611 in Martinique, and $260 in Costa Rica. The fees amounted to $1,859.22, and the amount of orders paid and repaid was $114,685.16.

Postal sales during the month amounted to $5,977.00, and newspaper postage to $1.60.

The revenue collections for the month were, as follows:

Distillation licenses	$65.70
Bicycle and chauffeur licenses	95.00
Motor vehicle licenses	22.00
Taxes, licenses, etc	7,434.60
Total	$7,617.30

Obituary.

Henry P. Coe, a naturalized American, employed on barge *No. 7* in the Atlantic Division, died at Colon Hospital on September 18 of hæmoglobinuric (blackwater) fever. He was born at Grand Cayman, was 49 years of age, married, and had been on the Isthmus nine months. The interment took place in Mount Hope cemetery.

Robert Grier, the four and one-half year old son of Mr. and Mrs. Wm. Grier of Culebra, while playing on the edge of a pool in the Culebra Cut on September 18, fell into the water and was drowned.

LABOR FORCE AND QUARTERS IN AUGUST.

The total force at work on the Canal and railroad on August 30 was 35,648, as compared with 34,681 at the end of July, 1911; with 35,867 in August, 1910, and 26,519 in August, 1909. Canal employes numbered 28,872, and railroad employes 6,776. The number of "gold," or white American employes, was 4,141, compared with 1,250 in July, 1911, and with 4,445 in August, 1910. The force report for August 30, follows:

Department.	SILVER EMPLOYES.*														Total Gold	Grand Total
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.	Total Silver		
Const'ct'n and Eng'r'ng	4 287	14	17	231	657	2.565	4,047	43	115	499	4,432	3 041	248	20,196	3,097	23,293
Civil Administration	166	..	..	2	4	26	......	......	...	....	....	7	....	205	307	512
Sanitation	6 2	..	..	3	2	3	5	......	..	1	5	409	7	1,110	375	1,485
Quartermaster's	902	..	1	112	158	120	245	1	19	2	64	953	†14	2,588	202	2,790
Subsistence	618	..	..	2	.....	......	......	......	...	....	.....	......	....	620	49	669
Disbursements	7	..	..	....	.....	......	......	......	...	....	.....	......	....	7	24	31
Examinat'n of Accounts	5	..	..	....	.....	......	......	......	...	....	.....	......	....	5	87	92
Total	6 657	14	18	350	821	2,714	4 297	44	134	502	4 501	4,410	269	24,731	4,141	8,872
Month previous	6,593	13	18	345	795	2,743	3,682	49	145	516	4,316	3,990	264	23 469	4,197	27,666

Panama railroad force, 3,44.; Panama railroad relocation force, 2,219; Panama railroad commissary force 1,116 Total 6,776 I. C. C. force 28 872 Grand total, 35,648.

*All wages specified are in gold. †Includes three 5-cent employes.

The employes in the Department of Construction and Engineering on August 30, were distributed, as follows:

Division.	SILVER EMPLOYES.*														Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.	Total Silver.		
Chief Engineer	22	..	..	2	1	......	......	......	...	.....	171	......	....	196	171	367
Mechanical	206	6	2	22	30	318	49	......	...	.....	729	28	10	1,400	661	2,061
Atlantic	1,869	6	13	109	333	1,108	1 297	36	...	69	1,016	5 5	41	6,422	859	7,281
Central	1,100	2	..	25	113	470	2,025	2	93	430	1,001	2,292	141	7,694	799	8,493
Pacific	1,090	..	2	73	180	669	676	5	22	...	1,515	196	56	4,484	607	5,091
Total	4,287	14	17	231	657	2,565	4 047	43	115	499	4,432	3,041	248	20 196	3,097	23,293
Month previous	4,204	13	18	224	637	2,592	3,448	49	109	514	4,247	2,701	239	18,995	3,131	22,126

*All wages specified are in gold.

QUARTERS.

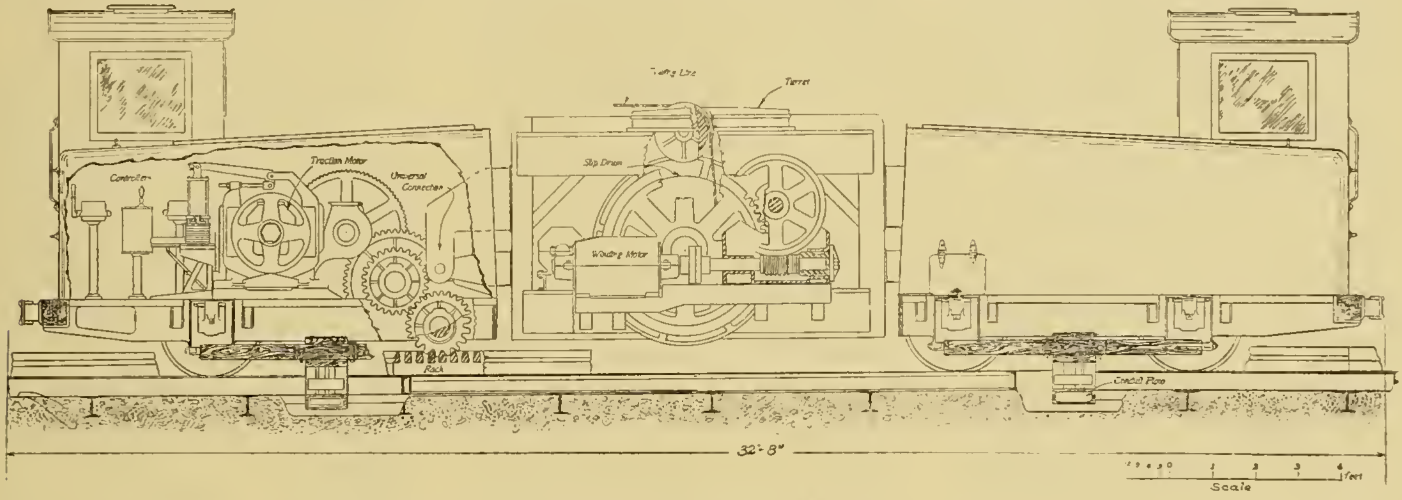
On August 30, there were 23,833 occupants of Commission quarters. Of these, 9,198 were white Americans; 5,240 were men, 2,016 women, and 1,942 children. There were 5,532 Europeans of the laborer class, of whom 4,934 were men, 250 women, 348 children. There were 9,103 West Indian negroes, of whom 6,662 were men, 1,060 women, and 1,381 children. Included in the above were 82 Asiatics, 45 East Indians and 103 Panamanians.

TOWING LOCOMOTIVES.

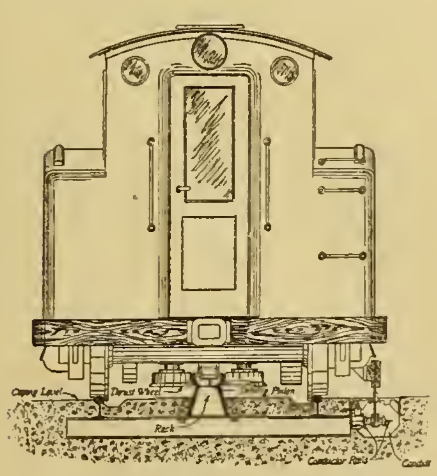
Method of Towing Ships Through Locks—Bids for Locomotives.

Specifications and plans for the locomotives which will tow ships through the locks have been sent to the Washington office, in order that bids may be asked for the forty locomotives that will be required for the locks at Gatun, Pedro Miguel, and Miraflores. The system of towing outlined in the specifications is the invention of Edward Schildhauer of the Canal engineering staff, and patent has been applied for, the Government having the right to use the patent without remuneration. Two bids will be called for, one for one locomotive for test purposes, and the other for the remaining 39, in case the first is satisfactory.

The system of towing provides for the passing through the locks of a ship at the rate of two miles an hour, the vessel being held steady between four lines of taut hawsers. A ship will come to a full stop in the forebay of the locks, where four hawsers will be attached to it, two forward on either side and two aft. At their other ends, these hawsers will be attached to the windlasses of four towing locomotives operating on the lock walls, two forward towing, and two aft being towed by their hawsers, thus holding the ship steady. The locomotives will run on a level, excepting where they pass from one lock to another, where they will climb heavy grades. Between the lower and intermediate locks at Gatun, for example, there is a difference in elevation of 29 feet 7 inches, and, in order to save concrete, this ascent is made in the shortest feasible distance. The horizontal distance from the point of tangency on the lower lock wall to the point of contact on the wall of the intermediate lock is 106½ feet. The vertical curve has a radius of 100 feet, and the maximum grade is one on two.



ELECTRIC TOWING LOCOMOTIVE.
SIDE VIEW. One tractor showing housing, one tractor and the windlass unit without housing, showing the machinery with certain parts omitted to depict the more clearly the working features.



ELECTRIC TOWING LOCOMOTIVE.
END VIEW. Showing rail system with rack rail in center and power rail on side in open conduit.

There will be two systems of tracks, one for towing, and the other for the return of the locomotives when not towing. The only crossovers between the tracks will be at each end of the locks, and there will be no switches in the rack road. The tracks will be of the 5-foot, Panama railroad gage, laid with 90-pound Bessemer steel rail on Carnegie steel ties, each tie anchored into the concrete by a bolt on the side farthest from the lock chamber. On the center wall there will be two towing tracks with one return track between them, and on each side wall a towing and return track. The towing tracks will have a center rack throughout, and the locomotive, while towing, will always operate on this rack. On the return tracks, at the incline between locks they will also operate on racks, but elsewhere they will run by friction. The racks will be of cast steel, so formed that lubricant will not drop upon the concrete, and that water will not be held in the interstices, this latter precaution being taken against the breeding of mosquitoes. The distance from center to center of adjoining teeth is 3.13 inches. After hauling the ship through the last gates, and into the forebay, the locomotives will coil their cables and return to await another ship, or will take hold of a vessel going in the opposite direction, and tow it through.

Each locomotive will consist of three parts, as shown by the drawings reproduced on this page—two tractors, and between them, a windlass. The windlass will not be mounted upon a truck, but will be supported by two arms extending on each side from either end and resting on bearings immediately over the rear wheels of the tractors. The ends of these arms will be equipped with rollers to permit free horizontal movement of the members when the locomotive is rounding a horizontal curve. The windlass is joined to the tractors by a drawbar and trunnion which have the effect of a universal joint, and permit free movement of the parts when the locomotive is on a vertical curve.

TRACTORS.

The tractors will be alike in every particular each consisting of a four-wheel truck upon which are mounted a motor and a control apparatus. They will run as rack or friction locomotives at the will of the operator, and the whole locomotive can be controlled from either cab.

While towing, and on the inclines between the locks, the tractor will run as a rack locomotive. Motion is communicated from the motor to the rack pinions by means of a system of gear reduction in which there are no clutches. There is absolutely no means of disconnecting this train of gears, and, as a result, the rack pinions are in motion only when the motors are. A solenoid brake, which closes upon a brake wheel whenever the current is cut off from the motors, provides against accident in case the current should be cut off while the locomotive is on one of the inclines. In such an event, the locomotive would come to a stop instantly, and be held there until the brake should be released. The rack pinions are of quill construction, and are so mounted upon the back axle of each truck, that the rack pinion will run free from the motor when the locomotive is on the return track, and traveling by friction.

For traveling by friction, the tractors will be fitted with jaw clutches, which will connect the traction motors with the driving wheels. These clutches will be operated by solenoids. The locomotive, when operating by friction, will move at a rate of five miles an hour.

The electrical equipment for each tractor will consist of one traction motor with control apparatus. The motor will have a full speed torque of 840 pounds at one foot radius, full load speed at no less than 470 revolutions per minute, and will be capable of developing not less than 75 per cent greater torque for a period of one minute. Alternating current will be used with the effect that synchronous speed will be maintained on all the locomotives in a tow. The motor will be 3-phase, induction, totally inclosed, moisture proof, high torque, or mill type, 25 cycles per second, with 220 volts between lines. The motors on the tractors of each locomotive will be operated in parallel, and controlled by resistance in the secondary circuit, accomplished by contactors in the primary and secondary circuits operated by master controllers, one in each cab. There will be not less than seven power points in each direction and between these and the braking position, there will be a coasting point, so that when power is turned off from either forward or reverse direction, there will be available a coasting point before the braking position is reached. The master controllers will be of the drum type, one for each tractor.

Current will be collected by each tractor by means of a plow carrying two contact shoes, each operating on a separate power rail carried in an open conduit, one for each of two phases, while the third phase will be carried by both track rails. The maximum load that will be thrown upon the traction motors will occur when the locomotive is ascending the inclines between the locks, and this will be greater than the load of towing a ship. Inasmuch as weight is not required for tractive effort, the whole locomotive will be of light construction as possible, the estimated weight being 70,000 pounds.

WINDLASS.

The third part of the locomotive will be a windlass for hauling in or paying out the towline, and motors to drive it. The drum will be 18 inches in diameter. A friction clutch will provide against it ever sustaining a pull of more than 25 000 pounds. Two speeds are provided for, one for coiling in the line under load at a rate of ten feet a minute, and the other for coiling it when not under load, at a rate of 200 feet per minute. Rotary switches in the cabs of each tractor will control the movement of the windlass.

There will be two motors, one for operating the windlass under load, and one for the rapid coiling of the hawser. The windlass motor will have a full speed torque of 120 pounds at one foot radius, will be capable of fifty per cent greater torque for one minute, and will have a full load speed of not less than 630 revolutions per minute. The coiling motor will have thirty pounds torque at one foot radius, be capable of exerting fifty per cent greater torque for one minute, and will have a full load speed of 630 revolutions per minute. These motors will be of the squirrel cage type, but otherwise will have the same classification as the motors in the tractors.

The towing line will pass through a sheave in a revolving turret, which will permit it to rotate easily in a horizontal plane, so that the line load may always be directly on the guiding sheave. The tow line will be of plow steel wire, composed of six strands of 37 wires each, will have a hemp center, and will be one inch in diameter. The wires must have a tensile strength of not less than 225,000 pounds per square inch, and the hawser must have an ultimate breaking strength of not less than 70,000 pounds. There will be a 4-foot loop at the ship end, and the length of the line from the center of this loop to the drum of the windlass will be 215 feet.

All the machinery, for both windlass and tractors, will be housed in a steel casing. The housing of the windlass will consist of a steel frame covered with 3-16-inch steel plate. The top sheeting must be capable of standing a strain of 85 pounds per square foot, and the upper side edges of the housing must be capable of sustaining a concentrated load of 12,000 pounds, which may be placed upon it when the tow line is used to warp a vessel up to the lock wall, and the line is at right angles to the locomotive, and the chock of the ship is considerably below the locomotive.

The Dennis Relief Fund.

Supplementing the statement of the fund for the relief of Mrs. L. R. Dennis, published in THE CANAL RECORD of September 6, the committee in charge of the fund on the Isthmus wishes to announce to the many subscribers that letters and statements have been received from various persons in Washington denying in whole the newspaper story to the effect that Mrs. Dennis and her children arrived in that city in a destitute condition. A letter from Mrs. Dennis states that she had cash in her pocket, and a money order for $60 available upon her arrival at Washington, and that she never stated to any one that she was destitute, or in any danger of want.

Benefit for the Late Captain Hammond.

The committee that has in charge the subscription for the benefit of the widow of the late Captain Edwin Hammond of the Panama railroad steamship line, announces that the list will be closed on September 30, and a draft for the amount collected will be sent to Mrs. Hammond. No money will be received after that date. Members of the committee are requested to send their lists and collections to Mr. W. G. Ross, Empire, C. Z., not later than September 30.

Civil Service Examinations.

Examination will be held, probably on October 29, for stenographer and typewriter in the Isthmian Canal and Philippine services, and for typewriter in the Isthmian Canal service. Applications therefor will be received until October 25. The kind of examination desired should be stated in requesting information in regard to the above.

In answer to the question in application forms as to *bona fide* residence, applicants are required to show such residence up to the date of application. It is to be noted that *bona fide* residence does not require continuous bodily presence, but refers to the place at which an applicant, if a voter, is legally entitled to vote.

JOHN K. BAXTER, *Secretary,*
Isthmian Civil Service Board.

CULEBRA, C. Z., September 29, 1911.

Misdirected Letters.

ANCON, C. Z., September 27, 1911.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Alveralo, Mrs. Falona
Fitzgerald, Emmett
Gauthier, A.
Gorman, Miss Mary
Gorman, Will E.
Hahn, Charlie F.
Hardt, Henry O.
Hickey, John
Hoffman, John, Jr.
Hoffman, Warren E.
James, Jos. H.
Kesner, C. M.
McDonald, Mrs. Iris
Miller, J. B.
Palmer, R. M.
Parks, Fred M.
Peters, F. C.
Smith, Fred C.
Suart, H. V.
Titus, W. L. (pkg.)
Torres, Leonidas
Von Deleigh, Mrs. Alice
Wentsler, H. E.

Auction Sale of Calves.

On Saturday, October 7, 1911, at 10 a. m., there will be sold at public sale to the highest bidder at the Ancon Hospital dairy, three or four calves, about one month old. The dairy is located near the insane asylum in the rear of the hospital grounds. The terms of the sale will be cash.

Family Quarters.

Applications for married quarters were on file on September 1, as follows:

DISTRICT.	List No 1.	List No. 2.
Ancon	1 (1)	34 (1)
Ancon Hospital	....	3 (1)
Balboa	....	31 (7)
Bas Obispo	1	19 (1)
Corozal	....	37 (1)
Cristobal	2	102
Culebra	2	25 (1)
Empire	....	63 (33)
Gatun	2	126 (44)
Gorgona	2	73 (32)
Las Cascadas	2	22 (4)
Pedro Miguel	3	42 (11)
Porto Bello	....	7 (3)
Tabernilla	....	2
Toro Point	....	7 (2)
Total	15	593 (141)

NOTE—The figures in parenthesis show the number of applicants already occupying regular or nonhousekeeping family quarters at stations other than those at which applications are filed.

Rainfall from September 1 to 23, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section	*Ins.*		*Ins.*
Ancon	2.22	22	5.13
Balboa	2.01	22	6.19
*Miraflores	1.05	2	5.32
Pedro Miguel	.92	2	4.48
Rio Grande	.77	8	3.79
Central Section—			
Culebra	.78	3	3.50
*Camacho	.70	8	4.01
Empire	.64	5	3.64
Gamboa	.63	5	3.55
*Juan Mina	.91	5	4.74
Alhajuela	1.11	7	3.80
*El Vigia	1.35	12	4.52
*Gorgona	.95	22	5.02
San Pablo	.45	22	2.62
Tabernilla	.63	17	2.63
Bohio	1.27	17	4.00
*Monte Lirio	2.00	1	7.62
Atlantic Section—			
Gatun	.42	19	2.36
*Brazos Brook	.85	19	5.59
Cristobal	1.54	1	6.39
Porto Bello	2.73	17	†10.95

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., September 22.

Stages of the Chagres

Maximum heights of the Chagres River for the week ending midnight, Saturday, September 23, 1911. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Sept. 17	126.8	93.1	45.8	13.7	13.6
Mon., Sept. 18	131.3	96.3	48.7	13.9	13.8
Tues., Sept. 19	129.5	96.1	49.3	14.7	14.2
Wed., Sept. 20	127.3	93.7	46.3	14.3	14.3
Thurs., Sept. 21	126.5	93.1	46.2	14.4	14.3
Fri., Sept. 22	129.4	95.2	47.9	14.4	14.3
Sat., Sept. 23	128.7	95.0	48.0	14.8	14.4
Height of low water	125.0	92.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending October 4, 1911 (75th meridian time):

DATE.	Low.	High.	Low.	High.	Low.
	A.M.	A.M.	P.M.	P.M.	P.M.
September 28	1.10	7.05	1.30	7.35	......
September 29	1 50	7.45	2.20	8.15	......
September 30	2.40	8.25	3.10	9.08	......
October 1	3.35	9.40	3.55	10.25	......
October 2	4.50	10.50	5.25	11.50	......
		P.M.			
October 3	6 05	12.10	6.30	......	......
		A.M.	A.M.		
October 4	......	12.52	7.03	1.10	7.20

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The schedule of moving picture entertainments for the week of October 2 to 7, follows: Monday, Culebra; Tuesday, Corozal; Wednesday, Empire; Thursday, Gorgona; Friday, Gatun; Saturday, Cristobal.

CULEBRA.

On Monday night, an exhibition in pool and billiards was given by J. L. Malone, the pool expert. In billiards, he played Messrs. Dubois and Thomson, winning by a score of 158 to 116. In pool, he played Messrs. Fleischman and Stevens, winning by a score of 77 to 58. After the games, Malone gave an exhibition of fancy shots.

On Tuesday night, the quartermaster's team defeated the "All stars" in volleyball, winning three games.

At the motion picture entertainment on Friday night, Mr. Weston from Cristobal furnished vocal and instrumental music.

On Saturday night, the Empire bowling team took three games from Culebra on the home alleys. Following are the scores:

Culebra.				Empire.			
Sickler	113	129	134	Pinney	161	173	167
McIlvaine	124			Giavelli	185	191	168
Fox		124	153	Anderson	175	184	154
Fleischman	163	164	138	Davis	143	114	154
Dougherty	176	180	181	Parkis	161	156	183
Baumer	117	155	141				
Total	693	752	747		825	818	826

GORGONA.

On Monday night, September 18, the gymnastic class, after the regular gymnasium work, had a group picture taken in the gymnasium. About twenty men were present. These pictures will be on sale the latter part of this week. In the hygiene class, the subject of "Diet" was discussed.

Two hundred and fifty people witnessed the moving picture show on Wednesday night, September 20. The next will be on Saturday night, September 30.

At the membership "smoker" on Saturday night, September 23, a program was rendered, consisting of orchestral music; songs by Messrs. Kelly, Ringger, Kramer, Robitoy, and Dr. Funk; monologues by marines from Camp Elliott; ballad, Mr. Gardner; dancing, Mr. Zelinski; club swinging, Mr. Kramer; burlesque, Messrs. Patterson and Emery; chalk sketching, Mr. Shaw; songs, quartet from Camp Elliott. The Gorgona indoor baseball team was presented with the Isthmian championship trophy for the season 1910-11, A. B. Dickson making the presentation. The membership contest was closed with Perry's team in the lead.

In the bowling at Gorgona on Saturday night, September 23, Gorgona took three games from Cristobal, the score being, as follows:

	1st game.	2d game.	3d game.
Cristobal	763	693	682
Gorgona	765	728	699

One hundred and twenty-five people attended the monthly song service held last Sunday evening. The Rev. Mr. Compton of Panama delivered the address; Mr. Thos. Gardner sang a solo, and Mrs. R. C. Shady played the piano.

EMPIRE.

The following scores of 200, or over, were bowled during the past week: Tenpins—Pinnery, 200, 213, 202; Mitchell, 224; Snyder, 202; Davis, 216; Spinks, 202; Pearson, 200; Parkis, 244, 203, 200, 217. Duckpins—Grund, 112; Reiman, 105.

The league games bowled on Empire alleys on Saturday night, September 23, resulted in Empire winning two out of three games from Culebra. Following are the scores:

Empire.				Culebra.			
Gustavson	190	164	146	Herrington	134	158	140
Spinks	180	167	212	Warner	136	157	132
Gorham	174	142	173	Driscoll	156	117	151
Pearson	160	169	157	Mengel	142	203	143
Huson	146	144		Case	185	174	168
Drake			147				
Total	850	786	835		753	809	734

The regular meeting of the literary and debating society will be held on Friday night, September 29, subject "What is socialism?"; leader, Mr. Morrison of Cristobal.

A pool and billiard tournament will be started on October 2, and all those interested are requested to leave their names at the desk.

On Sunday evening, October 1, there will be an informal song service at 8.30 o'clock.

GATUN.

On Wednesday night, September 20, Louis DePoorter, champion pool player of the Isthmus, played and defeated J. L. Malone, the pool expert. The score was 150 to 136. Mr. DePoorter also made the highest run of 19 balls, Mr. Malone's high run being 14 balls. Following the pool match, a "smoker" was held in the hall, at which there were recitations, acrobatic work, chalk cartoons, and orchestra music. Ice cream, punch, and sandwiches were served. Mr. Malone concluded the evening's entertainment with an exhibition of fancy pool and billiard shots.

Until further notice, Mr. Jess Hopkins will conduct the physical classes on Tuesday and Thursday evenings, with basketball practice on Tuesday evening, following the gymnasium class.

There will be a match game of basketball between the Pacifics and the Atlantics of the McClintic-Marshall Company on Saturday evening, September 30. E. M. Cooper will captain the Pacifics, and J. F. Minotti the Atlantics.

Forty-five new books were placed on the library shelves recently. Among them are a large Webster's unabridged dictionary, and a Rand-McNally atlas of the world. Another order will be sent to the States this week.

The Gatun bowling team defeated the Camp Elliott team on Saturday night, winning three games. Scores were, as follows:

Camp Elliott	701	764	619
Gatun	784	796	757

At Camp Elliott, the Gatun team won two out of three games. Scores, as follows:

Camp Elliott	750	753	746
Gatun	737	782	779

CRISTOBAL.

An audience of 230 witnessed the match games and fancy shots in pool, and billiards, on Friday evening, September 27, when J. L. Malone met Messrs. Wehmeier and Davis in pool, Mr. Malone winning by the score of 75 to 53. Mr. Mosher was matched with Mr. Malone in billiards, with a handicap of 50 points in a 200-point game, and the latter won by the score of 200 to 105. He also gave an exhibition of fancy shots.

A motion picture entertainment will be given on Friday night, September 29; members free; other adults 25 cents; children 15 cents. Mr. Weston will furnish special vocal music, and Mr. Glick will play the piano.

The medals won by the Cristobal members in the recent Isthmian duckpin league tournament will be presented at the "smoker" on Thursday night, September 28.

The Camp Elliott bowling team will bowl three tournament games at Cristobal on Saturday night, September 30, and a team from Cristobal will also bowl at Camp Elliott the same evening.

An open program will be presented on Wednesday evening, October 4, by the literary and debating club. The entertainment will be a political rally, at which presidential candidates of the various parties will be nominated.

The bowling team from Gorgona played the Cristobal team on Saturday night, losing three games to Cristobal. Following are the scores:

Gorgnna.				Cristobal.			
Otis	166	143	151	Barrett	187	168	184
Sims	162	171	161	Thomas	143	190	146
Arnold	158	155	136	T. Burns	177	165	186
A. Burns	110	156	124	Collins	171	164	158
Haldeman	198	191	122	Louch	169	186	193
Total	794	816	694		847	873	867

LOST—Between Colon and Gorgona on Sunday, September 17, a Masonic watch charm in the shape of a locket. Finder please return to John Gray, care of I. C. C. Band, Cristobal.

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to July 31, follows:

PERIODS.	Department of Civil Administration	Department of Law	Department of Sanitation.	Department of Construction and Engineering	General Items.	Total.
To June 30, 1909	3,427,090.29	....	9,673,539.28	69,622,561.42	78,022,606.10	160,745,797.09
Fiscal year, 1910	709,351.37	....	1,803,040.95	26,300,167.05	2,863,088.83	31,675,648.20
Fiscal year, 1911	755,079.44	....	1,717,792.62	27,463,401.31	3,112,334.60	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,084,530.55	317,751.38	2,615,340.33
Total	4,964,416.32	2,527.35	13,332,008.68	125,470,660.33	84,315,780.91	228,085,393.59

OFFICIAL CIRCULARS.

Captain of the Port.

CULEBRA, C. Z., September 22, 1911.

CIRCULAR No. 410:

Mr. J. St. C. Hunt is hereby appointed Captain of the Port of Ancon, and Mr. S. Layland is appointed Captain of the Port of Cristobal.

GEO. W. GOETHALS, *Chairman.*

Checking and Delivering of Cement.

CULEBRA, C. Z., September 25. 1911.

CIRCULAR No. 335-A:

Circular No. 335, dated June 10, 1910, providing method for checking and delivering cement, is hereby modified, as follows:

1. Hereafter, cement for the Atlantic Division shall be checked in the ship's hold by checkers for the Atlantic Division and Panama Railroad.
2. The Panama railroad shall receive credit for all overages shown. The Depot Quartermaster shall keep a running account of charges for shortages, against which he can credit overages, if such obtain, and on June 30, and on December 31, of each year, he shall render an account pertaining to the six months immediately preceding.
3. The records of all checks of cement delivered to the Atlantic and Pacific Divisions shall be sent direct to the Panama railroad. Set cement pertaining to each cargo shall be surveyed by the Surveying Officer immediately after discharge of cargo. The complete outturn of the cargo, as attested by the two divisions and the Surveying Officer, and accepted by the Panama railroad, shall then be forwarded to the Depot Quartermaster, who will accomplish bills of lading for the Commission on the data submitted.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Chief Clerk, Atlantic Division.

GATUN, C. Z., September 22, 1911.

TO ALL CONCERNED:

Effective this date, Mr. Ben Jenkins is appointed Chief Clerk of the Atlantic Division, vice Mr. R. M. Sands, resigned.

WM. L. SIBERT, *Division Engineer.*

Rates for Water at Colon and Cristobal.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., September 22, 1911.

Notice dated July 29, 1911, quoting rates on water supplied vessels at Colon and Cristobal, is hereby cancelled.

Effective at once, the following rates will apply:

500 gallons, or less	$2.50
501 to 1,000 gallons	3.00
1,001 to 1,500 gallons	3.50
1,501 to 2,000 gallons	4.00

All over 2,000 gallons, $1 for each additional 1,000 gallons.

F. MEARS, *Acting General Superintendent.*

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Las Cascadas, C. Z., on Sunday, October 1, 1911, at 6 p. m. The program follows:

1. March—*Ideal*........Reeves
2. Selection—*The Spring Maid*........Reinhardt
3. Romance—*A Tale of Two Hearts*........Roberts
4. Overture—*Jolly Robbers*........Suppe
5. Flower song—*Hearts and Flowers*........Tobani
6. Waltz—*Casino Tanze*........Gung'l
7. (*a*) Two step—*Billy*........Kendis
   (*b*) —*Chicken Reel*........Daly
8. Medley selection—*Rossiter's Popular Songs*..Alford
9. Characteristic Morceau—*On Tiptoe*........Hosmer
10. March—*Arbitrator*........Bagley

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at the Hotel Tivoli, Ancon, C. Z., on October 8, at 7.30 p. m.

The following vessels arrived at, or departed from the port of Balboa during the week ending September 23:

Arrivals—September 17, *Mantaro*, from Callao; September 18, *Guatemala*, from Callao; September 20, *City of Sidney*, from San Francisco; *Manavi*, from Buenaventura; September 21, *Chile*, from Guayaquil; September 22, *Tampico*, from San Francisco.

Departures—September 18, *Peru*, to Guayaquil; *Pachitea*, to Callao; September 19, *Quito*, to Guayaquil; September 21, *Limari*, to Valparaiso; September 23, *Mantaro*, to Callao.

LOST—On Sunday September 17, either at Empire station, or on train to Colon, ribbon watch fob with monogrammed locket set with a diamond—monogram "G. C." Finder return to Geo. Clark, Empire, C. Z., and receive reward.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Culebra, 8 a. m. to 1 p. m., and 3 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning September 21.

FRESH MEATS.	Price.
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24
MISCELLANEOUS.	
Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm	17
Sweetbread—Veal, per pound	1.20
Beef, per pound	25
Eggs, fresh, dozen	†29
one-half dozen only	15
Bluefish, fresh, per pound	14
Halibut, fresh, per pound	15
Shads, fresh, each	70
Shad roes, fresh, per pair	35
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.25
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each	60, 70, 80, 90, 1.00
Ducks, Western, about 4½ pounds, each	1.00
Broilers, milk fed, each	60
corn fed, each	55
Turkeys, per pound	26
Squabs, each	35
Capons, each	2.10
Fryers, corn fed, each	60
Partridges, each	50
Grouse, each	50
CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	†20
Sliced, per pound	†22
Half, for boiling, per pound	†21
Boiled, per pound	26
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	†23
Breakfast, sliced, per pound	†24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30
DAIRY PRODUCTS.	
Butter—Creamery special, per pound	32
Cheese—Roquefort, per pound	38
Philadelphia cream, cake	18
Young America, per pound	18
Swiss, per pound	26
Edam, each	1.00
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**25
Buttermilk, bottle	**15
Fer-mil-lac, bottle	**25
Ice cream, quart	‡25
½-gallon	‡50
VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	6
Cabbage, per pound	†4
Cucumbers, per pound	3
Carrots, per pound	3
Cauliflower, per pound	12
Lettuce, per pound	12
Onions, per pound	3½
Potatoes, white, per pound	4
sweet, per pound	2
Pears, alligator, each	6
Romaine, per pound	12
Turnips, per pound	3
Tomatoes, per pound	4
Yams, per pound	3
Cantaloupes, each	8
Grapes, assorted, per pound	7
Grapes, California Malaga, per pound	10
Lemons, dozen	24
Limes, per 100	80
Oranges, California, per dozen	*36
Pears, per pound	7
Peaches, pound	6
Plums, per pound	7
Watermelons, each	45

---

*Indicates reduction from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
‡Sold only from commissaries; no orders taken for delivery

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon during the two weeks ending September 23:

Prinz Sigismund, September 10, from New York, with 10 cases harness oil and 40 cases black paint for stock.

Arminster, September 11, from Baltimore, with 1,700 kegs spikes, 2,062 pieces drill casing, 625 bundles steel bars, 20,325 cases dynamite, 8 cases paint, 137 kegs bolts, 1,546 pieces steel rail, 358 barrels sulphate alumina, 50 barrels lump alum, for stock.

Panama, September 11, from New York, with 132 pieces white oak lumber, 18 pieces steel plates, 500 kegs track spikes, 11 pieces steel bars, 12 bundles wicker baskets, 4 barrels varnish, 12 cases paint, 33 cases paper, 7 cases spelter, 6 cases range parts, for stock; 20 cases insulating tape, 1,000 bundles bolts, 12 bags bolts, 13 cases incandescent lamps, for Mechanical Division; and a miscellaneous cargo, the whole consisting of 2,080 packages, weighing 125 tons.

Oruba, September 10, from New York, with 12 cases electrical material for stock.

Abangarez, September 14, from New Orleans, with 32 bundles washers for Pacific Division; 23 bundles doors for Panama Railroad Company; 7 cases scythe stones, 1,293 bales hay, 70 pieces white oak lumber, 3,912 pieces siding, 4,581 pieces yellow pine lumber, for stock; 5,152 pieces car siding, 3,036 pieces car roofing, for Mechanical Division.

Metapan, September 14, from New York, with 26 bales air brake hose, 60 pieces switches, 125 pieces frogs, 50 bundles steel tubes, 6 cases rubber hose, for stock.

Ancon, September 16, from New York, with 10 barrels electrical material for Atlantic Division; 13 barrels fire brick, 13 barrels ferro manganese, 80 barrels copper ingots, for Mechanical Division; 29 pieces steel castings for Central Division; 25 kegs nuts, 30 bales wool waste, 25 cases ink, for stock; 124,960 bags cement for Atlantic and Pacific Divisions.

Advance, September 18, from New York, with 150 cases ivory soap, 8 crates mop handles, 833 bundles corrugated roofing, 20 pieces switches, 107 cases salt water soap, 7 cases ticking, 34 barrels rosin, 85 kegs spikes, 10 bales rubber hose, 19 cases envelopes, 30 cases rough castings, 10 cases putty, 50 cases varnish, for stock; 14 cases books, 10 cases school supplies, for Department of Civil Administration; 28 cases caskets, 10 cases drugs, for Sanitary Department; and a miscellaneous cargo, the whole consisting of 1,505 packages, weighing 165 tons.

Zacapa, September 21, from New York, with 32 cases electrical material for Atlantic Division; 40 cases brake shoes for Mechanical Division; 202 pieces steel beams for stock.

Atenas, September 21, from New Orleans, with 704 pieces yellow pine lumber, 51 pieces white oak lumber, 314 bundles flooring, for stock; 107 pieces ties for Pacific Division; 12 cases castings, 387 tons pig iron, for Mechanical Division; 17 cases school supplies for Department of Civil Administration.

Prinz Eitel Friedrich, September 23, from New York, with 500 bundles wire for stock; 13 cases desks, 22 cases desk fittings, for Department of Civil Administration.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line; the Panama Railroad Company's dates being subject to change.

NEW YORK TO CRISTOBAL.			
Panama	P. R. R.	Friday	Sept. 29
Cristobal	P. R. R.	Wednesday	Oct. 4
Advance	P. R. R.	Thursday	Oct. 5
Colon	P. R. R.	Thursday	Oct. 12
Allianca	P. R. R.	Wednesday	Oct. 18
Panama	P. R. R.	Tuesday	Oct. 24
Advance	P. R. R.	Monday	Oct. 30
CRISTOBAL TO NEW YORK.			
Ancon	P. R. R.	Thursday	Sept. 28
Colon	P. R. R.	Saturday	Sept. 30
Panama	P. R. R.	Thursday	Oct. 12
Advance	P. R. R.	Tuesday	Oct. 17
Colon	P. R. R.	Tuesday	Oct. 24
Allianca	P. R. R.	Monday	Oct. 30
Panama	P. R. R.	Sunday	Nov. 5
Advance	P. R. R.	Saturday	Nov. 11
NEW YORK TO COLON.			
Almirante	U. F. C.	Thursday	Sept. 21
Prinz August Wilhelm	H.-A.	Saturday	Sept. 23
Santa Marta	U. F. C.	Thursday	Sept. 28
Prinz Sigismund	H.-A.	Friday	Sept. 29
Clyde	R. M.	Saturday	Sept. 30
Metapan	U. F. C.	Thursday	Oct. 5
Prinz Joachim	H.-A.	Saturday	Oct. 7
Zacapa	U. F. C.	Thursday	Oct. 12
Prinz Eitel Friedrich	H.-A.	Friday	Oct. 13
Atrato	R. M.	Saturday	Oct. 14
Almirante	U. F. C.	Thursday	Oct. 19
Prinz August Wilhelm	H.-A.	Saturday	Oct. 21
Santa Marta	U. F. C.	Thursday	Oct. 26
Prinz Sigismund	H.-A.	Friday	Oct. 27
Thames	R. M.	Saturday	Oct. 28
Metapan	U. F. C.	Thursday	Nov. 2
COLON TO NEW YORK.			
Zacapa	U. F. C.	Thursday	Sept. 28
Prinz Eitel Friedrich	H.-A.	Saturday	Sept. 30
Atrato	R. M.	Tuesday	Oct. 3
Almirante	U. F. C.	Thursday	Oct. 5
Prinz August Wilhelm	H.-A.	Tuesday	Oct. 10
Santa Marta	U. F. C.	Thursday	Oct. 12
Prinz Sigismund	H.-A.	Saturday	Oct. 14
Thames	R. M.	Tuesday	Oct. 17
Metapan	U. F. C.	Thursday	Oct. 19
Prinz Joachim	H.-A.	Tuesday	Oct. 24
Zacapa	U. F. C.	Thursday	Oct. 26
Prinz Eitel Friedrich	H.-A.	Saturday	Oct. 28
Trent	R. M.	Tuesday	Oct. 31
Almirante	U. F. C.	Thursday	Nov. 2
Prinz August Wilhelm	H.-A.	Tuesday	Nov. 7
NEW ORLEANS TO COLON.			
Turrialba	U. F. C.	Saturday	Sept. 23
Heredia	U. F. C.	Wednesday	Sept. 27
Abangarez	U. F. C.	Saturday	Sept. 30
Cartago	U. F. C.	Wednesday	Oct. 4
Atenas	U. F. C.	Saturday	Oct. 7
Parismina	U. F. C.	Wednesday	Oct. 11
Turrialba	U. F. C.	Saturday	Oct. 14
Heredia	U. F. C.	Wednesday	Oct. 18
Abangarez	U. F. C.	Saturday	Oct. 21
Cartago	U. F. C.	Wednesday	Oct. 25
Atenas	U. F. C.	Saturday	Oct. 28
Parismina	U. F. C.	Wednesday	Nov. 1
COLON TO NEW ORLEANS.			
Parismina	U. F. C.	Thursday	Sept. 28
Atenas	U. F. C.	Thursday	Sept. 28
Heredia	U. F. C.	Thursday	Oct. 5
Turrialba	U. F. C.	Thursday	Oct. 5
Cartago	U. F. C.	Thursday	Oct. 12
Abangarez	U. F. C.	Thursday	Oct. 12
Parismina	U. F. C.	Thursday	Oct. 19
Atenas	U. F. C.	Thursday	Oct. 19
Heredia	U. F. C.	Thursday	Oct. 26
Turrialba	U. F. C.	Thursday	Oct. 26

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; ships for New Orleans in the coastwise service on Thursdays at 4 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

The Leyland line steamer *Louisinian* sails for New Orleans direct on or about September 28.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, OCTOBER 4, 1911. No. 6.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Excavation in Culebra Cut.

The excavation in the Central Division for the month of September, aggregated 1,361,445 cubic yards, of which 1,340,173 cubic yards were taken from the Culebra section, known as Culebra Cut. This is the highest September record in the Culebra section since the commencement of operations on the Isthmus by the United States.

Lights for the Pacific Entrance

A requisition has been made on the Washington office for two light apparatuses for the towers forming range 9-11 at the southeast end of the tangent, extending from Balboa to Miraflores in the Pacific entrance to the Canal. The towers are nearing completion. It is proposed to install lights in which acetylene gas is absorbed under pressure by acetone, the acetone itself being soaked up by a mechanical absorbent to prevent the escape of a bubble of gas under pressure, an occurrence possible if the acetone is in the reservoir in its liquid state. Buoys with this type of light are used satisfactorily both in Europe and in the United States. One of these lights will be equipped with the Dalen sun valve in order to see whether or not the valve would be economical under the night and day conditions existing on the Canal Zone. Locomotive headlights in stock on the Isthmus will be used with the gas burners. Tentatively the characteristics for the front and rear lights will be—front light, 0.3 seconds light, 0.7 seconds dark; rear light, 1.0 seconds light, 1.0 seconds dark. The temporary equipment in range 9-11 will give a service capacity of six months for each light.

Excavation Between Mindi and Gatun.

The suction dredge *Sandpiper* began excavating on September 30, in the Canal prism between Mindi hills and Gatun locks, where it is estimated that four and three-quarter million yards of material must be removed. At present, the dredge will excavate towards the steam shovel pit at Mindi. It is expected that the dry excavation at Mindi will be completed about January 1, 1912, then the suction dredge will break into the pit from the southward, and the ladder and dipper dredges at work in the Atlantic entrance will enter it from the north. Before that time the 18-inch suction dredge, now excavating sand at Nombre de Dios, will be towed to Gatun and set at work with the *Sandpiper* in this section of the Canal. All the material excepting a small hill just south of Mindi, and an undetermined but small amount of rock immediatly north of the north caisson sill of Gatun locks, can be removed by the suction dredges.

In the lower lock at Gatun the concrete layers are at work on the last of the piers, against which a bulkhead will be built to keep water from the lock chambers, while a suction dredge is excavating for the foundations of the north guide walls and in the north forebay of the locks. After all the material that can be taken out by this method has been removed, the forebay will be unwatered, in order that the guide and flare walls may be built in the dry. The remaining excavation will probably be done by dipper dredges.

Testing Lock Machine Motors.

A shed has been erected near the locks at Gatun in which motors purchased for the operation of the lock valve machines are given tests for the climatic conditions on the Isthmus. Shop tests are now in progress in the States, where the motors will be put through a working trial with one of the valve machines now ready at the works of the Wheeling Mold & Foundry Company. Eight motors were purchased from three manufacturers, out of a total of 236 required, and on the result of the tests in the States and the climatic tests on the Isthmus the general order will be given. The object of the test on the Isthmus is to determine which type of motor will best stand the deteriorating effects of the climate. Upon their arrival, the motors were placed in the dry room of the storehouse at Gatun, and there the insulation resistance was measured at regular intervals for a week, and after storage in the dry room, it was measured further at intervals of twenty-four hours.

The tests include (1) the measuring of insulation resistance of the motors and the application of a 1,500-volt high potential test for one minute; (2) measuring of insulation resistance just prior to turning on steam and at intervals of six hours thereafter; (3) removal of handhole covers to admit saturated steam to the room so that the air is at a temperature of 50 degrees centigrade; (4) subject all motors to a high potential test of 1,000 volts ten seconds every twenty-four hours. These tests will be continued for one week. If the data do not show any decided results, the tests will be continued, but in a temperature of 75 degrees centigrade. In addition the motors will be immersed in water at normal air temperature, and the insulation resistance will be measured just prior to immersion and after immersion. At intervals of six hours for two days just prior to removal from the water a high potential test of 500 volts will be applied for ten seconds.

If these tests do not show conclusive results internal heat will be applied by running the motors on regular pressure or at higher pressure to produce the desired heating effect. This test will show the rapidity with which the moisture in the insulation will be driven off, and will also render the insulation more porous and finally weaken it as to its insulating properties.

At the Pacific Entrance.

Clapet *No.* 5, formerly a part of the Pacific Division dredging fleet, has been converted into a tank vessel, and will be used in storing water at Flamenco Island. It was rebuilt in 1900, and continued in the dredging work until 1910, when it was placed out of commission. The hoppers in the hull of the vessel have been sealed up with concrete, and will be used as tanks, holding altogether about 300 tons of water.

Clapet *No.* 6 is on the shipways undergoing repairs to its hull. It was rebuilt in 1905, and has been in continuous service since then.

The dredges at the Pacific entrance are now working wholly in rock, the mud deposits in the part of the channel where they are excavating, having been removed with the exception of those created by silting. The dredges are now working in the Canal, south of the site of the new cofferdam.

Slides at Gatun Locks.

Part of the earth bank behind the east wall of the lower lock at Gatun sank on the morning of September 29, and rose up a few feet away. The movement was apparently caused by the rock fill which carries the tracks on which the cableway towers run, and only a few hours before the sinking occurred one of the towers was on the section which fell. The lock wall has been constructed at this point to a sufficient height to keep the moving earth from sliding into the lock chamber, and no difficulty was experienced from this source. But the work of repairing the track fill took four days, and the concrete laying in the lower locks was delayed by that much. Only a week before, a similar sinking under the cableway tracks occurred on the west side of the locks.

These movements of the earth at the lower locks began about a year ago. They are due entirely to the nature of the soil which overlies the firmer earth and rock upon which the locks are founded. It is singularly lacking in coherency and moves on a very flat slope. As a result the excavation in the lower locks was continually hampered by sections of the banks falling or sliding into the pit. The total

NOTES OF PROGRESS.

(Continued.)

amount of material that has moved in this manner is probably not over fifty thousand cubic yards, yet it has retarded excavation, and consequently the laying of concrete. The most serious consequence has been that it has caused a four month's delay in the completion of the cofferdam across the lower end of the locks behind which suction dredges are to excavate for the north forebay and the wing walls. The piers for this bulkhead are now nearing completion. In the laying of concrete the slides have had the effect of limiting the space in which the cableways can operate over the lock chamber, and thus of restricting the amount that can be placed. It was believed that when the walls were completed to a height to keep the banks from sliding into the lock chamber, all the trouble would be past; but the movement of the light soil under the fills necessary for the cableway tower tracks has introduced a new difficulty, which although not serious may continue to retard the work in the lower locks.

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending September 30, follows:

Date.	Hours worked.	Cubic Yards.
September 25	4.26	1,853
September 26	4.01	1,782
September 27	4.48	1,992
September 28	4.10	1,829
September 29	4.51	1,982
September 30	4.57	1,959
Total	27.13	11,397

Ancon Crusher.

A statement of rock crushed at the Ancon quarry during the week ending September 30, follows:

Date.	Hours worked.	Cubic Yards.
September 25	7.50	2,857
September 26	6.45	3,317
September 27	7.45	2,805
September 28	6.40	2,575
September 29	6.55	2,619
September 30	7.40	2,782
Total	43.35	16,955

Gatun Dam Spillway

The concrete work in the Spillway of Gatun Dam is about 70 per cent completed, 157,074 cubic yards, out of a total of 225,000, having been placed at the close of work on September 30. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
September 25	102	6.00	1
September 26	128	7.00	1
September 27	96	5.30	1
September 28	142	7.00	1
September 29	100	6.00	1
September 30	100	6.00	1
Total	668	37.30	1
Previously reported	156,406		
Grand total	157,074		

Improvements at Railroad Station in Panama.

A shed will be placed over the platform at the railroad station in Panama to protect persons alighting from and boarding passenger trains from the showers which are so frequent during the rainy season. The shed will extend from the hospital car gate to the last of the exits for first-class passengers, thus including all exits. It will be 605 feet long, 24 feet wide, and 14 feet high at the eaves, and will be built of iron frame and corrugated iron roof. Shelters will extend from the platform to the exits, and also to the gates through which passengers go to take the train. A shelter, 40 feet long and 20 feet wide, will be built on the street side of the railway station, in front of the entrance to the waiting room for first-class passengers, to the end that persons may alight from coaches and enter the station without being subjected to rains.

CONCRETE WORK IN THE LOCKS.

Over 66 per cent of the concrete is in place, the amount at the close of work on September 30, being 2,796.170 cubic yards, out of a total of approximately 4,199,400. A total of 33,396 cubic yards of concrete was laid in the locks during the week ending September 30.

GATUN LOCKS.

Over 81.5 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on September 30, being 1,624,039½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending September 30, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours daily, and the auxiliary plant 9 hours.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
September 25	1,980	32.04	4	316	6.40	2	80	2,376
September 26	1,904	30.58	4	236	5.40	2	78	2,218
September 27	2,100	31.58	4	418	7.40	2	..	2.518
September 28	1,912	30.14	4	224	5.40	2	..	2,136
September 29	1,538	23.44	4	190	3.40	2	..	1,728
September 30	1,122	16.38	4	468	7.40	2	..	1,590
*Portable mixers				406				406
Total	10,556	165.36	4	2,258	37.00	2	158	12,972
Previously reported								1,611,067½
Grand total								1,624,039½

*The 406 yards shown for the portable mixers are reinforced concrete, and were placed on the following days: September 25th, 53; September 26th, 93; September 27th, 69½; September 28th, 87½; September 29th, 65; September 39th, 38.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 87 per cent completed, 730,654 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on September 30. The record for each of the six 8-hour working days of last week. follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
September 25	540	15.00	2	103	5.00	1		643
September 26	510	15.00	2	78	5.50	2		588
September 27	490	14.00	2	97	7.75	3		587
September 28	440	13.00	2	97	6.00	2		537
September 29	390	12.00	2	218	15.00	2		608
September 30	420	13.00	2	185	11.50	3		605
Total	2,790	82.00	2	778	50.75	2.17		3,568
Previously reported							4,411	727,086
Grand total							4,411	730,654

MIRAFLORES LOCKS.

Over 32 per cent of the concrete for the system of two twin locks at Miraflores was in place on September 30, the total amount on that date being 441,447, cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Sept. 25	1,118	28.67	6	1,162	14.60	2	294	24.00	4		2,574
Sept. 26	1,208	27.83	4	1,192	15.90	2	334	26.15	4		*2,745
Sept. 27	910	25.75	4	1,024	13.60	2	276	23.50	4		2,210
Sept. 28	766	18.80	6	980	11.90	2	335	22.50	4		2,081
Sept. 29	782	19.67	6	672	11.00	2	306	26.00	4		1,760
Sept. 30	812	24.17	6	1,304	17.00	2	370	29.50	4		2,486
Total	5,596	144 89	5.33	6,334	84.00	2	1,915	151 65	4		13,856
Previously reported										3,693	427,621
Grand total										3,693	441,477

*Includes 11 cubic yards laid by hand.

EXECUTIVE ORDERS.

Special Commissioner on Industrial and Commercial Value of the Canal.

By order of the President, Professor Emory R. Johnson is hereby appointed a Special Commissioner for the purpose of bringing up to as late a date as practicable the data contained in the Report of the Isthmian Canal Commission for 1899-1901 relative to the industrial and commercial value of the Isthmian Canal, and also to formulate rules and regulations governing the measurement of ships going through the Canal and to make an investigation and recommendation regarding the tolls to be charged. Until his report is forthcoming Professor Johnson will be allowed his actual expenses and fifteen dollars a day including Sundays and holidays. Upon the completion of Professor Johnson's work the Secretary of War will finally fix his entire compensation.

Henry L. Stimson,
Secretary of War.

War Department,
September 1, 1911.

Removal of Packing or Waste from Journal Boxes of Railroad Equipment.

By virtue of the authority vested in me I hereby establish the following Order for the Canal Zone.

Section 1. Any person who shall without lawful authority take or remove the packing or waste from out of any journal box or boxes of any locomotive engine, tender, coach, caboose or truck, used or operated on any railroad, shall be guilty of a misdemeanor, and upon conviction shall be sentenced to pay a fine not exceeding One Hundred Dollars, or imprisonment in jail not exceeding thirty days, or both fine and imprisonment, in the discretion of the court.

Section 2. This order shall take effect sixty days from and after this date.

Wm. H. Taft.

The White House,
September 14, 1911.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on October 11. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8:00 a. m. on October 11, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

Oil Pipe Line Changes.

On Monday, September 11, the Union Oil Company abandoned its line along the old railroad right-of-way from Barbacoas bridge, near San Pablo, to Gatun, a distance of about 18 miles, and no oil will be pumped across the Isthmus until the completion of the oil company's new line, which will parallel the Panama railroad relocation from Caimito Junction to Gatun. About two miles of line have already been laid at each end of the gap, leaving 65,000 feet, or nearly 13 miles to be placed. The crossover from Barbacoas bridge, where the old line now terminates, to Caimito Junction on the railroad relocation, has been built, and is ready for service. The construction work between Caimito Junction and Gatun will be begun at once, working from the south end, and using the material removed from the old pipe line. It is believed that the work of closing the gap on the relocation can be accomplished in two and one-half to three months, depending on weather conditions. There has been placed in storage in the tanks at Mount Hope, oil to the amount of 110,000 barrels, equivalent to a four months' supply for the works at that end of the Canal, at the present rate of consumption. The amount of oil in the tanks at Petrolia will shortly be increased to 150,000 barrels, making the total amount in storage on the Isthmus upward of 260,000 barrels.

During the month of August, deliveries to the Commission aggregated 74,413 barrels, or a little less than the April, 1911, deliveries, which are the largest made in any one month to date. The deliveries to the Commission during the current year, at the present rate of consumption, will considerably exceed those for any year previous since oil began to be used as fuel on the Canal works. The record of deliveries, by months, from January 1, 1911, to September 1, from the oil company's tanks, follows:

Months.	I. C. C.	Others.	Total.
January	62,640	1,195	63,835
February	72,939	4,797	77,736
March	66,766	4,911	71,677
April	74,930	2,527	77,457
May	72,020	3,225	75,245
June	71,032	6,269	77,301
July	69,228	2,983	72,211
August	74,413	4,044	78,457
Total	563,968	29,951	593,919

The total deliveries of oil from the Union Oil Company's tanks on the Isthmus during August exceeded the record for any previous month.

Three ships are now engaged in the oil carrying trade to the Isthmus, the *Pectan* of 65,000 barrels capacity, and the *Trinculo* and *Oberon* of 45,000 barrels capacity each. A new vessel is now under construction in English yards, which will be chartered by the oil company as an addition to its fleet. It will be completed early next year, and will be of practically the same capacity as the *Pectan.*

Dredge No. 6 to be Destroyed.

Ladder dredge *No. 6*, which sank in the Atlantic entrance to the Canal, near the intersection of the French Canal, on June 19, will be destroyed. A diver is now at work taking off such parts as may be utilized to advantage on the other dredges and, after it has been stripped, the hull with its ladder will be blown up by dynamite. The pieces will be taken from the Canal channel by one of the crane boats and stored on the island opposite the Mount Hope marine shop.

This dredge was built in Scotland and brought to the Isthmus by the old French company for dredging in the entrance to the Canal at Cristobal. It was taken from the storage bay for floating equipment at Folks River in 1905 and, after partial repairing, was used for about a year. In 1908 it was placed in dry dock and the hull was repaired, after which it was returned to work in the Atlantic entrance, where it was operated for a period of eighteen months before repairs were again necessary. It was thoroughly overhauled in the fall of 1909, and continued in the service without extensive repairs until the time it sank. At that time there were only two caretakers on board, and the investigation held soon afterwards did not determine the cause of the accident. It was first planned to raise the dredge, but an examination of the hull showed that the plates were in such bad condition that they probably would not stand the severe strain incident to righting it. On this account its destruction was decided upon.

Steam Shovel Record for One Year on P. R. R. Relocation.

On September 7, 1911, steam shovel No. 257 completed a year of continuous work on the Relocation of the Panama Railroad. This shovel came out of Empire Shop and commenced work September 8, 1910. It has loaded more or less material every one of the 304 working days between those dates, and in eight of the calendar months included in this period, has held the record for yardage on the Isthmus. The following table shows in detail the work done:

Month	Output by cross-section.		
	Earth	Rock	Total
1910.	Cu. Yds	Cu. Yds	Cu. Yds
September	2,725	37,030	39,755
October	7,900	45,109	53,009
November	8,330	45,000	53,330
December	7,000	40,440	47,440
1911.			
January	4,000	53,310	57,310
February	1,345	57,550	58,895
March	5,400	64,200	69,600
April	....	62,540	62,540
May	....	70,030	70,030
June	....	58,850	58,850
July	....	57,270	57,270
August	....	71,550	71,550
September	....	15,200	15,200
Total	36,700	678,079	714,779

Month.	Output by Car Report	Per cent of Time that Shovel Worked	No. of Working Days
1910.			
September	37,840	64.3	20
October	58,030	66.1	26
November	50,020	64.1	24
December	50,660	62.5	26
1911.			
January	56,730	75.0	25
February	60,210	79.9	23
March	67,900	77.2	27
April	61,100	70.7	24
May	72,030	77.6	26
June	65,260	72.4	26
July	62,540	74.6	25
August	76,030	80.3	27
September	15,200	76.9	5
Total	733,550	72.3	304

Note:
Average output per day, 2,351 cubic yards.
Output for September, 1911 (5 days) taken from car report.
Working days are eight hours.

Until April, 1911, this shovel was taking out main line cuts on the steep side hill south of Gatun, the height of the bank being generally over 100 feet, and running up to 165 feet. Under these conditions slides interfered more or less with the work. Since April the shovel has been in a borrow pit. Throughout the year the material was argillaceous sandstone, similar to that found in the Gatun lock site. The output has been loaded into 10 yard dump cars. J. H. LaRowe has been engineer on this shovel during the entire year with W. E. Reader, E. E. Austin and others as craneman. Handling of trains, shifting the shovel, drilling and blasting has been in charge of C. G. Jones, supervisor. The shovel is a 103 ton model with 5 yard dipper.

TRAFFIC BY PANAMA ROUTE.

Freight Increase of Twenty-Two Per cent—Tonnage at Entry Ports—Passenger Business.

Freight tonnage by the Panama railroad increased 22.39 per cent during the year ending June 30. 1911, over that for the previous fiscal year. The revenue tonnage, that is freight exclusive of that carried for the railroad company, increased 23.04 per cent. The increase was in both freight carried southbound and northbound, and represents all traffic except that to Panama from the United States and to San Francisco from Europe in the southbound trade, and that from Panama to the United States and from Central America and Mexico to the United States in northbound traffic. The following statement summarizes the tonnage for the fiscal year 1911, as compared with that of 1910:

	1911	1910	Increase
Southbound (to Panama)...	1,178,560	991,856	18.82
Northbound (from Panama).	378,470	280,361	34.99
Total.........	1,557,030	1,272,217	22.39

Statements of freight tonnage handled during the years 1911 and 1910, showing origin and destination, follow:

FROM ALL POINTS TO ALL POINTS.

	1911	1910	Increase
Colon to Panama—			Per cent
New York, Philadelphia, and Gulf ports to San Francisco............	96,420	46,394	107.83
New York and Gulf ports to Panama South Pacific Central America and Mexico........	103,989	89,856	15.73
Europe to Panama, South Pacific, Central America, Mexico and San Francisco........	123,291	110,518	11.56
Colon to Panama (local)—			
Commercial........	139,145	131,983	5.43
Isthmian Canal Commission........	691,890	587,483	17.77
Company freight........	23,825	25,622	*7.01
Total........	1,178,560	991,856	18.82
Panama to Colon—			
San Francisco to New York, Philadelphia, and Gulf ports...........	115,509	33,482	244.99
South Pacific, Central America, Mexico, and Panama, to New York and Gulf ports........	59,823	60,846	*1.68
South Pacific, Central America, Mexico, San Francisco and Panama to Europe........	67,739	48,089	40.86
San Francisco to Colon........	397	83	378.31
Panama to Colon (local)—			
Commercial freight........	33,534	31,673	5.88
Isthmian Canal Commission........	91,944	97,974	*6.15
Company freight........	9,524	8,214	15.95
Total........	378,470	280,361	34.99
Total westbound and eastbound........	1,557,030	1,272,217	22.39

COUNTRIES OF ORIGIN AND DESTINATION.

	1911	1910	Increase
Colon to Panama—			
For Panama........	921,968	811,853	13.56
Central America........	47,039	38,125	23.38
South Pacific........	110,914	92,984	19.28
San Francisco........	98,067	48,271	103.16
Mexico........	572	623	*8.19
Total........	1,178,560	991,856	18.82
Panama to Colon—			
From Panama........	139,159	142,540	*2.37
Central America........	33,635	19,673	70.97
South Pacific........	87,670	83,754	4.68
San Francisco........	117,658	34,055	245.49
Mexico........	348	339	2.65
Total........	378,470	280,361	34.99
Total westbound and eastbound........	1,557,030	1,272,217	22.39

*Decrease.

PORT BUSINESS.

VESSELS ARRIVING IN 1910 AND 1911.

Port.	Kind	Vessels					
		1911	1910	Increase		Decrease	
				Number	Per cent	Number.	Per cent
Colon and Cristoabl........	Coal	86	91	......	......	5	5.49
Colon and Cristobal........	Other Freight	1,613	1,247	366	29.35	.....	......
Total........	....	1,699	1,338	361	26.98	.....	......
Balboa and Panama........	All	243	212	31	14.62	......	......

The revenue freight, including both merchandise and coal amounted to 1,523,681 tons, an increase of 285,300 tons or 23.04 per cent. The total revenue derived from this traffic was $2,398,177.88 an increase of $25,605.94 or 1.08 per cent. Company freight amounted to 33,349 tons, and there were carried 3,449 tons of mail and baggage. 2,909 tons of express, which are included in the totals quoted. Of the freight tonnage 75.69 per cent was southbound, and 24.31 northbound, as compared with 77.96 and 22.04 per cent for the previous year. The through freight tonnage was 36.42 per cent of the total handled as against 30.60 per cent in 1910. Coal, including that for the company, comprised 49.53 per cent of the local traffic southbound.

Freight southbound from various sources shows the following increases:

From New York, Philadelphia, and Gulf ports to—

	Tons.
South Pacific ports........	10,881
San Francisco........	50,026
Central America and Mexico........	6,337
Panama........	*3,085

From Europe to—

South Pacific ports........	7,049
Panama........	3,427
Central America and Mexico........	2,527
San Francisco........	*230

*Decrease.

In the northward direction the following increases are shown:

To New York, Philadelphia and Gulf ports, from—

	Tons.
South Pacific ports........	1,014
San Francisco........	82,026
Panama........	*850
Central America and Mexico........	*1,186

*Decrease.

To Europe from—

South Pacific ports........	2,902
San Francisco........	1,262
Panama........	328
Central America and Mexico........	15,158

A statement showing the number of passengers carried on the railroad and earnings follows:

CLASS.	1911	1910	Increase Per cent
First........	696,688	627,397	11.04
Second........	1,715,466	1,600,172	7.21
Total.......	2,412,154	2,227,569	8.29

The gross revenue from the transportation of passengers was $686,991.25, a decrease of 3.52 per cent from 1910, while the number of passengers carried shows an increase of 184,585, or 8.29 per cent. The revenue received from through passengers shows an increase of $6,542.24, or 20.92 per cent, and the number of through passengers an increase of 2,563, or 36.56 per cent. There was a decrease of 4.64 per cent in revenue from local passengers, and an increase of 8.20 per cent in the number carried.

TONNAGE OF VESSELS AT PORTS IN 1911 AND 1910.

PORT	KIND.	TONNAGE											
		RECEIVED.				DESPATCHED.				TOTAL.			
		1911.	1910.	Increase.		1911.	1910.	Increase.		1911.	1910.	Increase.	
				Tons.	Per cent.			Tons.	Per cent.			Tons.	Per cent.
Colon........	Coal........	492,284	490,974	1,310	0.27	....	....	....	......	492,284	490,974	1,310	0.27
and Cristobal........	Other Freight.	749,375	577,927	171,448	29.66	270,492	169,101	101,391	59.96	1,019,867	747,028	272,839	36.52
Total....		1,241,659	1,068,901	172,758	16.16	270,492	169,101	101,391	59.96	1,512,151	1,238,002	274,149	22.14
Balboa........	All........	257,383	180,094	77,289	42.92	242,563	174,522	68,041	38.97	499,946	354,616	145,330	40.98

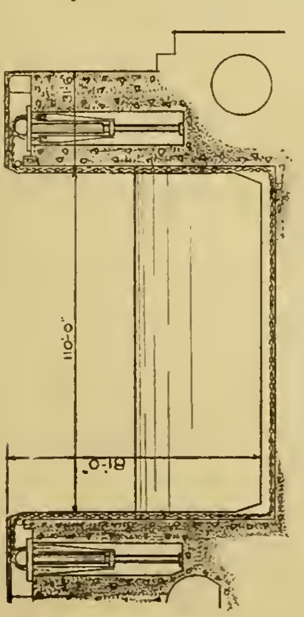
FENDER CHAINS.

Method of Operating Chains That will Guard Approach to Lock Gates.

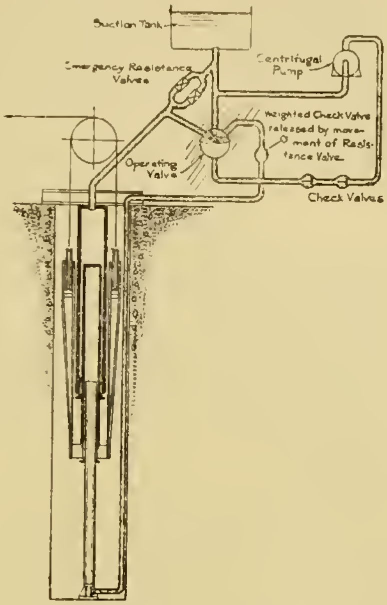
Proposals have been requested for materials for chain fenders for all the locks, and bids will be opened at the Washington office on November 14. Included in the proposed contract are castings for hawse-pipe, cylinders and detail parts, certain structural materials, operating valves, piping and fittings from cylinders to pump and tank, and mechanism for starting and stopping the pump. Parts not included are the main pumps and motors and all electrical machinery and wiring, chains, suction tanks, resistance valves, stairways and gratings, drainage pumps, their motors, piping etc., also riveted steel anchorages attached to hawse-pipe castings.

The function of the fender chains is to prevent the lock gates (used as a bulkhead or dam across axis of locks to form a higher level of water, which may have no corresponding amount of water against them on the downstream side), from being rammed by a ship that may approach too near the gates under its own steam or by escaping from the towing locomotives. They will therefore be placed on the up-stream side of the following gates: Gatun—Upper guard gates, intermediate and safety gates of the first or upper locks. Pedro Miguel—Upper guard, intermediate and safety gates. Miraflores Locks—Upper guard, intermediate and safety gates of the upper locks. At the lower end of each flight of locks are guard gates, mitering in an opposite direction from the lock gates, whose function is to keep water from the chamber between these gates and the lower operating gates, in case it is desired to pump water from this chamber for the purpose of repairing or painting the lower lock gates. In front of these guard gates chain fenders will also be stretched. In all 24 fender chains and 48 machines will be required.

In operation the chain will be stretched across the lock chamber from the top of the opposing walls, and when it is desired to allow a ship to pass, the chain will be lowered into a groove made for the purpose in the lock floor. It will be raised again after the ship passes. The raising and lowering will be accomplished from both sides by mechanism mounted in pits or chambers in the lock walls as shown in sketches, herewith. This mechanism as designed consists of a hydraulically operated system of cylinders, and a train of sheaves by which one foot of movement by the cylinder accomplishes four feet by the chain.



CROSS SECTION OF LOCKS
Showing Fender Chain in position for passing of ships, and situation of Cylinder Pits.


Suction Tank
Emergency Resistance Valves
Centrifugal Pump
Weighted Check Valve released by movement of Resistance Valve
Operating Valve
Check Valves

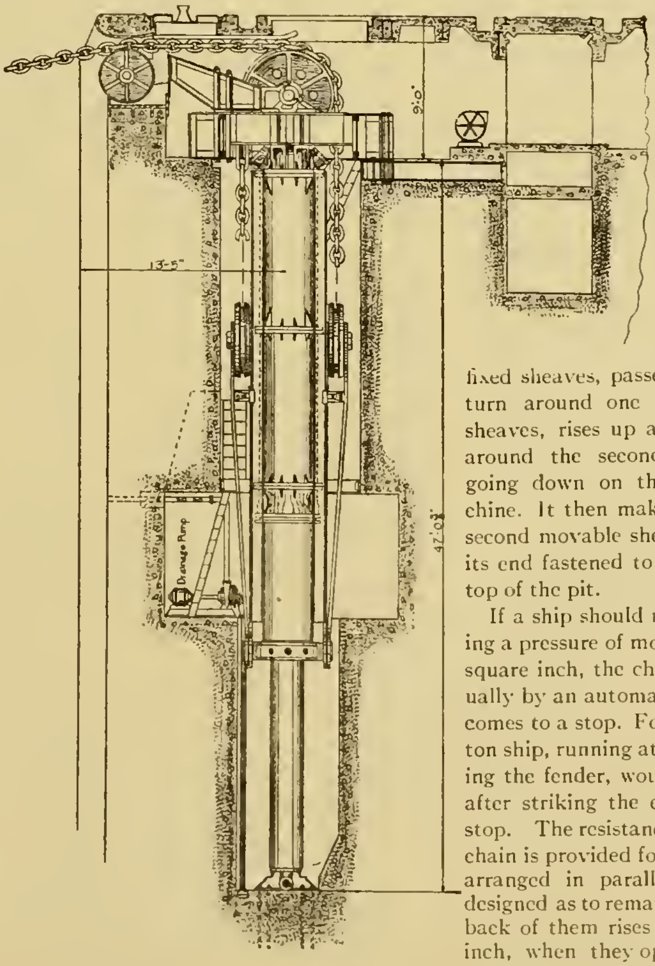
SKETCH SHOWING GENERAL LAYOUT OF FENDER CHAIN OPERATING MACHINERY.

The system of cylinders consists of one fixed cylinder 40 inches in diameter, one cylinder 38 inches in diameter moving within this, and a fixed plunger 25 inches in diameter upon which the smaller cylinder moves. The cylinder is actuated by water forced into the large cylinder for downward motion or raising the chain, and into the small cylinder for upward motion or lowering the chain. This change of flow is produced by varying the position of the operating valve by means of a solenoid operated by remote control. A large open tank provides storage for the water displaced in the outer cylinder as the moving cylinder rises, and also makes up for the waste due to leakage and evaporation. The stroke of the cylinder is 21 feet 6 inches, and each complete movement therefore raises or lowers the chain 86 feet for each machine, or 192 for both. The operating pressure is 60 pounds per square inch.

Water is forced into the cylinders by a centrifugal pump, situated in the pit, which is started automatically by a quick-acting electric switch, operated by a system of rods and levers, actuated by a stop fastened to the guide yoke attached to the moving cylinder. This mechanism also prevents any considerable movement of the cylinder through leakage, insuring the continued maintenance of the chain in its upper or lower positions.

The smaller cylinder carries two sheaves by means of eyebars attached to a crosshead at its lower end. Two similar sheaves at right angles to the lower ones are carried in stationary bearings supported on riveted girders spanning the pit. The chain passes through a hawse-pipe casting in the lock wall, which is secured to heavy riveted anchorages embedded in the concrete. A riveted strut connects the horizontal girders with the hawse-pipe casting, so that the entire outward pull of the chain is transferred to the anchorages.

The chain is supported on an idler fastened to the hawse-pipe casting, then makes a quarter turn around one of the fixed sheaves, passes down and makes a half turn around one of the lower movable sheaves, rises up again, making a half turn around the second stationary sheave and going down on the other side of the machine. It then makes a half turn around the second movable sheave and, passing up, has its end fastened to one of the girders at the top of the pit.



ELEVATION SHOWING CYLINDERS, PLUNGER, AND SHEAVES.

If a ship should run into the fender, exerting a pressure of more than 750 pounds to the square inch, the chain will be paid out gradually by an automatic release until the vessel comes to a stop. For instance, a ten thousand ton ship, running at four knots an hour, striking the fender, would travel 72 feet 6 inches after striking the chain before coming to a stop. The resistance to the paying out of the chain is provided for by two resistance valves arranged in parallel. These valves are so designed as to remain closed until the pressure back of them rises to 750 pounds per square inch, when they open automatically maintaining a constant pressure, and hence stress, on the chain.

REVOLVER MATCHES.

Results of Pistol Practice by Police and Culebra Clubs.

The United States Revolver Association championship match held at Culebra on September 23, 24 and 25, synchronously with the national matches in the United States, resulted as follows:

Possible Scores	A 500	B 500	C 750	D 250	F 250
Name					
L. D. Cornish...	414	438	541	198	167
C. B. Larzelere..	391	434	504	169	161
Jacob Bernson ..	386	430	311	154	124
M. W. Fox.....	394	426	......	......	127
T. E. L. Lipsey..	357	......	......	......	105
John Acors.....	......	......	353	......	......
J. B. Cooper....	......	......	282	......	......
L. A. McIntyre.	......	......	241	......	......

REMARKS:—Match A was for revolvers; Match B for pistols; Matches C and D for military revolvers, rapid fire, 5 shots in 15 seconds; and Match F for pocket revolvers, 5 shots in 30 seconds.

The finals in the pistol tournament for the Canal Zone police were shot off at Gorgona on the afternoon of September 23 the ten men who had qualified making the following scores:

Order. Merit	NAME.	Rank.	SCORE.		
			Bulls-eye target.	Moving target.	Aggregate.
1.	John W. Maddera	1|c. pol.	65	36	101
2.	Leo. A. McIntire.	Corporal	62	39	101
3.	John Acors......	1|c. pol.	65	30	95
4.	James L. Wood...	1|c. pol.	56	35	91
5.	Arthur Flood....	1|c. pol.	55	31	86
6.	Walter F. Doby..	Corporal	65	18	83
7.	William Cooney..	1|c. pol.	55	27	82
8.	George W. Lewis.	Lieut.	56	26	82
9.	B. F. Merryman..	1|c. pol.	52	19	71
10.	A. G. Belknap...	Inspector	54	13	67

The tie between Maddera and McIntire was shot off, and the match was won by Maddera. He was awarded a bronze medal about the size of a peso, containing on its face an enameled pistol between the words "Police" and "Canal Zone," and on the obverse, "Highest score, 1911," with a blank for the name of the winner. The trophy was offered by the Chief of Police.

This tournament is the first of the semi-annual practice matches that have been arranged for the police force, which is comcomposed of 153 officers and first-class policemen, and 116 second-class, or negro policemen. The preliminaries consisted of an instruction practice, and a record practice. In the record practice there were two classes—target and moving figure shooting. The distances were 15, 25, and 50 yards, the time limit for five shots at the bullseye target thirty seconds, and at the moving figure ten seconds. The targets were made up, as follows:

Bullseye target—Is a rectangle 6 feet high by 4 feet wide. Black circular bullseye, 8 inches diameter, value of hit, 5; center ring, 26 inches diameter, value of hit, 4; inner ring, 46 inches, value of hit, 3; outer, remainder of target, value of hit, 2. A ricochet has the same value as a direct hit.

Moving target—Silhouette of a man in the standing position on a rectangular target, 4 by 6 feet, the feet of the silhouette resting on the lower line of the target. Value of hits, direct or ricochet: On figure, 5; on target, outside of figure, 2. The moving target is suspended from a taut wire across an open space from two clumps of brush, the nearest point at which it appears being 15 yards away from the position in which the contestant stands, the farthest, 50 yards distant; distance traveled by the figure in the open, 40 yards. The figure is drawn across the open space away from the marksman at the rate of 40 yards in ten seconds, and back again at the same rate, the effect being to simulate a man running from, and toward the marksman while making for cover. The Colt's service revolver and ammunition are used.

PERSONAL.

Maj. T. C. Dickson will arrive on the Isthmus, from his annual vacation leave, on the *Panama*, due October 5.

The Hon. Nicholas Longworth, Member of Congress from Ohio, accompanied by his wife, is making a visit of one week to the Isthmus. They will return to the United States by way of New Orleans on Thursday the 5th instant.

Justice of the Supreme Court.

Mr. William H. Jackson, who has been Senior District Judge since June 5, 1911, has been appointed Associate Justice of the Canal Zone Supreme Court and assumed office on September 29. He will preside in the Court of the Second Circuit at Empire. The Supreme Court now consists of H. A. Gudger, Chief Justice, and Associate Justices Thomas E. Brown, Jr., and William H. Jackson. It has a full membership for the first time since December, 1910.

Arrival of 10th Infantry.

The Tenth Regiment of Infantry, U. S. A., arrived on the Canal Zone on Wednesday morning, having embarked at Galveston, Tex., on September 26, from Fort Sam Houston.

Temporary barracks have been provided in canal quarters at Las Cascadas. The regiment, as it arrived on the Zone, consists of 33 officers and 813 enlisted men. Col. Henry A. Greene is in command. The other officers are Lieut. Col. Blauvelt, Maj. Chas. Gerhardt, Maj. J. H. Ford, M. D., Capts. Lawrence D. Cabell, Q. M., Ralph E. Ingram, Frederick W. Coleman, Ethelbert L. D. Breckenridge, Jas. J. Mayes, S. W. Widdefield, R. C. Humber, Wm. Taylor; First Lieuts. John B. Shuman, Walter L. Reed, Jesse Gaston, Wm. F. Harrell, Fitzhugh B. Allderdice, Gordon R. Catts, Andrew J. White, Chas. F. Conry, H. B. Jones; Second Lieuts. John B. DeLancey, Avery B Cummings, Ebenezer G. Beuret, Lewis C. Rockwell, Wm. J. Fitzmaurice, John H. Stutesman, Robt. L. Eichelberger, Herbert E. Marshburn, Fred B. Carrithers, F. B. Grey, Harry R. Kutz.

Second Lieutenants Philip B. Fleming, John W. Stewart, Joseph C. Mehaffey, Paul S. Reinecke, and Raymon A. Wheeler of the Corps of Engineers, U. S. A., have been assigned to duty on the Canal work from November 25, 1911, to June 15, 1912.

Sanitation of Golden Green.

Temporary sanitation of the village of Golden Green, near Culebra, will be accomplished by the installation of six concrete lined waterproof vaults, instead of a sewer system. The cost will be borne equally by the Panama railroad, on whose land the village is situated, and the Canal Zone Government. The cost of maintenance will be borne by the railroad company. Permanent provision in the shape of a sewer system is not made at this time, because it is believed the village will cease to be occupied to so large an extent as at present, when the Canal is in operation, and the railroad is on the east side of Culebra Cut.

Manzanillo Canoe Club.

The Manzanillo Canoe Club was organized at Cristobal on September 6, with Oliver G. Tubby, president; A. A. J. Kopp, vice-president, and Jeptha W. Dibrell, secretary-treasurer. It is the intention of the club to erect a thoroughly equipped canoe house on Folks River Bay. The membership will be between forty and fifty; active membership to be confined to canoe owners. Owners, or intending owners, of canoes, desiring to become associated with the club, may make application for membership.

Missing Men.

Any one having information regarding the whereabouts of Jules Levy, who is supposed to be residing on the Isthmus of Panama, is requested to communicate with the Director of Posts, Ancon, C. Z.

Any one having information regarding W. M. Palmer, a carpenter by occupation, and who is supposed to have come to the Isthmus of Panama, is requested to communicate with the American Legation Panama.

Building Notes.

One of the first permanent buildings to be erected on the Canal Zone has been authorized for quarters for the caretaker of Brazos Brook Reservoir. It will be constructed of concrete and will have a tile roof, in contrast with the frame buildings with sheet iron roofs which are used as Canal quarters. It will be one story high and will contain a sitting room, dining room, kitchen and pantry, two bed rooms, bath, dry room, a servant's room and bath.

A four room school building for the colored children of Ancon and Corozal will be erected in Ancon from material taken from labor barracks at Tabernilla.

A fifteen-foot addition has been authorized for the Ancon Market.

Obituary.

W. E. Clayton, an employe of the Atlantic Division at Cristobal, died at Colon Hospital on September 27. He was forty-five years of age, a widower, and had been on the Isthmus four years. He is survived by a brother living at Huntington, Ind.

The death of Mrs. Boyd, wife of O. S. Boyd, occurred at their home in Cristobal on Friday, September 20, 1911. She had been on the Isthmus for over six years, and is survived by her husband and two children. Funeral services will be held at Christ Church, Colon, on Thursday morning October 12, immediately after arrival of train No. 2.

United Spanish War Veterans.

The United Spanish War Veterans will give a military ball at the Hotel Tivoli, Ancon, on the evening of November 2, for the benefit of their relief fund.

Atlantic Entrance Breakwater.

A lack of piles, with which to continue the construction of the trestle from which rock is dumped, has caused a partial suspension of work on the breakwater at the Atlantic entrance. Three weeks ago the supply of piles ran out, two weeks ago one of the steam shovels in the quarry suspended work because there was no place to dump the rock it was excavating, and last week the second shovel shut down. It is expected that a shipment of piles will be received this week, in which event, work will be resumed. Of two shipments received from the States recently aggregating 2,960 piles, 1,250 piles have been condemned. The trestle now extends 6,619 feet from the shore line towards the entrance of the Canal, and it is filled with Toro Point rock up to within a few feet of the water surface. This rock disintegrates on exposure to the air and, therefore, the superstructure of the breakwater will be made with hard rock from Porto Bello.

The second of the derrick barges which will handle this rock was launched at Mount Hope marine shops on September 28. Its hoisting apparatus, a Lidgerwood double drum, with 14 by 18 inch cylinders, has arrived from the States, and this, with boilers from an old French clapet and a steam shovel boom engine for the swinging apparatus, will be installed at once. Work at the marine shops is in such condition at present that both the derrick barges can now be completed.

Ladder dredge *No. 1* which has had its hull plates renewed at the Mount Hope marine shop, has rejoined the dredging fleet at the Atlantic entrance and is now working just outside the shore line.

Suction dredge *No. 86*, which underwent extensive repairs at the Mount Hope marine shop after having completed the fill of Colon, has been assigned to work on the hydraulic fill of Gatun dam, taking the place vacated by the *Sandpiper* on the north side of the east section.

A petition that the battleship *Oregon* be assigned first place in the naval pageant, which it is assumed will be a feature of the exercises at the opening of the Canal, has been received on the Isthmus, and has been referred to the Spanish War Veterans for such action as they deem fit to take.

Band Concert

A concert will be given by the Isthmian Canal Commission Band at the Hotel Tivoli, Ancon, C. Z., on Sunday, October 8, 1911, at 7.30 p. m. The program follows:

1. March—*Ideal*........ .... Reeves
2. Selection—*The Pink Lady*.......... ..... Caryl
3. Intermezzo Elegante—*From Tales of Hoffman* Offenbach
4. Overture—*Jolly Robbers*...... .. . Suppe
5. Characteristic Morceau—*On Tiptoe*.. ... Hosmer
6. (*a*) Two-step—*Billy* ...... Kendis
   (*b*) Popular March—*Who Are you With Tonight?* .Van Alstyn
7. Paraphrase—*Rocked in the Cradle of the Deep*. . Lovenberg
8. Medley Selection—*Rossiter's Popular Songs*—Alford
9. March—*Kaiser Friedrich* .. .. Friedman

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Cristobal, C. Z., on October 15, at 4.30 p. m.

Married.

BUCKLEY-HARRISON—On September 6, in Baltimore, Md., Donald Buckley, of Boston, Mass., to Mamie E. Harrison, of Wasbington, D. C., the Rev. Thomas R. Woodford officiating. Canal Zone residence, Culebra.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The schedule of moving picture entertainments for the week of October 9 to 14 follows:

Monday, Empire; Tuesday, Culebra; Wednesday, Corozal; Thursday, Cristobal; Friday, Gorgona; Saturday, Gatun.

The standing of the Isthmian Bowling League teams on Saturday, September 30, was as follows:

	Won.	Lost	P.C.
Empire..................	22	8	.733
Cristobal................	18	12	.600
Gatun....................	18	12	.600
Gorgona..................	16	14	.533
Marines........	13	17	.433
Culebra..................	4	26	.133

COROZAL.

On Tuesday night, September 28, J. L. Malone played pool and billiard games, and gave an exhibition. In the billiard game he defeated Messrs. Farmer, Thompson and Cunningham, 100 to 54. In the pool game he defeated Messrs. Wilson and Baker, 75 to 36.

On Friday the McClintic-Marshall basketball team from Pedro Miguel played a practice game with the Corozal team. Saturday night the Corozal team will meet the Gorgona team at Corozal in the first of the league games.

Twenty-four new books have been ordered for the library.

The improvements authorized for the Corozal clubhouse include an extension in which will be located a pair of bowling alleys, a well equipped locker room with adjoining shower baths, and a barber shop.

CULEBRA.

The volley ball game between the "All Stars" and "Married Men" on Tuesday evening was won by the married men. The game between the Quartermaster's Department and Assistant Engineers on Thursday evening was won by the latter.

The handicap bowling tournament closed on Friday evening. Following are the names of the men that finished, and their standings:

Name	Won	Lost
Baumer	17	2
Bronson	14	4
Smith	14	4
Sjoblum	14	5
Mitchell	14	5
Leylander	13	6
Sickler	13	6
Fox	10	9
Driscoll	11	8
Huttelmaier	6	16
Warner	5	14
Mengal	5	14
Fay	4	15
Herrington	4	15

High Score: Driscoll, 247; Mengel, 213; Case, 205.

Duckpin score; over 100: Mitchell, 102; Fox, 106, 109: Hobart, 102, 103.

The Gatun bowling team took three games from Culebra, at Culebra Saturday evening. The scores follow:

Culebra.				Gatun.			
Mengel.	157	179	138	O'Meara.	153	163	179
Sjoblum.	146	104		Cham'l'n	180	180	180
Stilwell.	142	110	132	Beattie..	159	153	148
Case.....	167	181	180	Galloway.	201	154	142
Dougherty.	162	156	210	Barte..	148	166	190
Fay.....			135				
Total..	774	730	795		841	816	839

EMPIRE.

The following high scores were bowled on the alleys during the past week: Tenpins—Pinney 202, 204, 208 213, 201, 204, 257; Parkis 233, 257; Anderson, 202; Giavolli, 201. Duckpins—Coombs, 107, 105; Pulsifer, 110; Grund, 104; Payne, 115.

The league games bowled on Empire alleys on Saturday night, September 30, resulted in Empire's winning three games. Scores were as follows:

Empire.				Gorgona.			
Pinney. ..	162	183	168	Otis	178	156	164
Giavolli ..	148	193	194	Sims...	163	135	177
Anderson	138	170	157	Arnold	139	120	180
Davis....	179	178	177	Orr	156	143	156
Parkis.	188	172	180	Hald'm'n	172	142	155
Total	815	896	876		808	696	832

On Saturday night, October 7, the Gatun team will bowl on the Empire alleys in the league series.

The Isthmian Basket Ball League will begin the season on Saturday, October 7, when the Empire team will play Culebra, on the latter's court.

The regular meeting of the Empire Literary and Debating Society will be held on Friday evening, October 6.

On Sunday evening, October 8, there will be an informal song service at 8.30 o'clock.

GORGONA.

Mr. Malone, a pool and billiard expert, gave an exhibition on Wednesday night, September 27. In pool he defeated two local players by a score of 140 to 42. In billiards he defeated Geo. Strong by a score of 150 to 26 and Thos. Ryan, 125 to 21.

At the meeting of the basketball players on Wednesday night, September 27, Jerry Carpenter was elected captain and Geo. Auer, manager.

In the bowling contest on Gorgona alleys Saturday night, Empire took two out of three games from the local team. Following are the scores:

Empire.				Gorgona..			
Gustavson	168	191	147	Roper....	148	133	143
Spink....	148	157	143	W. Var'c'p	159	162	176
Gorham...	145	157	178	R. Var'c'p	145	103	113
Pierson....	135	167	155	Sexton...	161	149	171
Huson....	136	146	164	Haggerty.	137	132	147
Total.	732	818	787		750	679	755

GATUN.

In the return match game of pool between Malone, a professional from the States, and DePoorter, of Gatun, the latter was defeated.

On Saturday evening, September 30, a game of basket ball was played at Gatun between two teams of the McClintic-Marshall Company. The score resulted, Atlantics, 25; Pacifics, 6. The line up: Atlantics—Wilson, R. F.; Hortenstine, L. F.; Minotti, C.; Conley, R. G.; Gibson, L. G.; Pacifics—Cooper, R. F.; Ramsey, L. F.; Hutzley, C.; Vannerman, R. G.; Maguire, L. G. Goals from field: Wilson, 1; Hortenstine, 5; Minotti, 3, Conley, 2; Cooper, 1. Fouls: Minotti, 3; Cooper, 4.

On Saturday night, October 7, Gatun will play Cristobal in the first basketball game of the season.

An order for 110 new books was sent to the States on Tuesday, October 3rd. These books comprise late fiction and some books of a technical character.

Gatun took all six games of bowling on Saturday, September 30. The score on the home alleys was:

	1st game.	2d game.	3rd game.
Gatun....	787	793	776
Culebra..	754	682	676

A large quantity of gymnasium supplies and 100 new Gatun pennants have arrived from the States and are now on sale. Ten mineralite duckpin bowling balls were also received.

CRISTOBAL.

Fifty-seven men attended the debate at the meeting of the Literary and Debating Club on Wednesday evening, the subject under discussion being "Resolved, That the Initiative, Referendum and Recall are best for the government of our States." Decision was in favor of the affirmative, after which there was a public discussion.

At the presentation smoker held on Thursday night, September 28, there was an attendance of 324. A program was rendered and the presentation of medals to winners of the Isthmian Duck Pin League by C. M. Bullard followed.

The subject to be discussed before the Debating Club on Wednesday evening, October 11, will be "Resolved, That the present freedom of the press should be restricted."

The Culebra bowling team will play the Cristobal team on the home alleys on Saturday evening, October 7.

Following is the score of games between bowling the Marines from Camp Elliott and Cristobal, at Cristobal on Saturday evening, September 30:

Marines.				Cristobal.			
Martins...	118	132	160	Gibson....	155	162	158
Dowel.	124	162	158	Blackburn.	160	169	200
Tryan....	135	129	154	Rabbitt...	165	205	144
Cataldo.	118	125	152	Bullard...	175	171	192
Clouse.	137	160	178	Louch.....	175	181	181
Total	632	708	802		830	888	875

Misdirected Letters.

ANCON, C. Z., October 4, 1911.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Bowie, William H.
Bryan, Joseph
Carnes, J. E.
Clinton, G. P.
Cows, William
Crawford, David (2)
Donatello, F.
Fabian, Lionel J. (2d class)
Farr, Henry W.
Foster, Captain John
Gettin, H. W.
Goldstein, Miss Sara
Haglund, George E.
Hall, Robert
Hershey, A. D.
Killough, Alex
Marshall, John (2)
McGowan, F. P.
Miller, Wm.
Mollinhour, H.
Newell, John W.
Ornara, John
Payne, Jas. T.
Powell, C. W.
Rose, L. E.
St. John, S. W.
Smith, Mrs. L.
Webber, Mike
Witmer, G. S.
Woods, Louis F. (2)

LOST—On passenger train arriving at Panama at 9 a. m., September 24, a small atlas, and draftsman's ruling pen. Finder will please leave with baggage agent in the railroad station at Panama.

OFFICIAL CIRCULARS.

Reduction of Force

CULEBRA, C. Z., September 25, 1911.

HEADS OF DEPARTMENTS AND DIVISIONS:

European laborers are being discharged on account of reduction of force in the Central Division, and the Acting Chief Quartermaster advises that it is impossible to place these men in other Departments or Division In fact, at the present time there appears to be a surplus of both European and West Indian labor. Some few of the older Spaniards of doubtful efficiency have been furnished transportation to return to Spain, and it may prove necessary to resort to wholesale repatriations. In order that the present situation may be be handled more intelligently, it is requested that you will advise whether the conditions of your work will require within the next several months either an increase or reduction in the number of European laborers employed, and what will be the probable extent of the increase or reduction.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Depot Quartermaster

CULEBRA, C. Z., September 27, 1911.

MR. C. L. PARKER,
Assistant Depot Quartermaster,
Mount Hope, Canal Zone.

Sir:

Effective September 28, 1911, and during the absence of Captain Courtland Nixon, on leave, you will act as Depot Quartermaster.

You are authorized to receive and receipt for supplies of the Isthmian Canal Commission consigned to Colonel C. A. Devol, or the Chief Quartermaster, Isthmian Canal Commission; to accomplish bills of lading; to certify invoices for payment as to quantity and quality of supplies shown on such invoices; and in general to perform such duties as properly belong to the position of Depot Quartermaster.

Respectfully,
R. E. WOOD,
Acting Chief Quartermaster.

Acting as Purchasing Agent

CULEBRA, C. Z., September 28, 1911.

CIRCULAR No. 413:

Effective September 28, 1911, and during the absence on leave of Captain Courtland Nixon, Mr. Charles L. Parker, Assistant Depot Quartermaster, will perform the duties of Purchasing Agent on the Isthmus.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning October 21.

The Commissary Bulletin for October contains notices of new supplies received, reduction in prices on shirts, shoes, and raincoats, and a price list of groceries and tobaccos.

The only material changes in the cold storage price list as published in last week's CANAL RECORD are:

Increased—fresh eggs, from 29 to 30 cents a dozen, from 15 to 16 cents a half dozen; ham, 26 to 28 cents a pound; lettuce, 12 to 15 cents a pound; romaine, 12 to 15 cents a pound; tomatoes, 4 to 6 cents a pound; peaches, 6 to 8, grapes, 7 to 8, and plums 7 to 10 cents a pound. Decreased—Cauliflower, 12 to 10 cents a pound. New apples, 7 cents per pound.

Sale of Horizontal Stationary Gasoline Engine

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, until two o'clock P. M., October 16, 1911, when they will be opened in the presence of attending bidders, for one 2½ horse power "Williamsport Special" horizontal stationary gasoline engine, complete with battery box, cooling tank and driving belt. Engine can be seen and examined on any working day between the hours of seven to eleven A. M., and one to five P. M., upon application to this office. The right is reserved to reject any or all bids. Bids must be plainly marked "Proposal to purchase one stationary gasoline engine, to be opened October 16, 1911." and addressed to the Acting Depot Quartermaster, Mount Hope, C. Z.

CHARLES L. PARKER,
Acting Depot Quartermaster.

Supplies for the Canal

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon and Balboa during the week ending September 30:

Colon, September 24, from New York, with 13 cases machinery, 10 cases copper tubes, for Atlantic Division; 1,485 pieces pig iron for Mechanical Division; 10 barrels paint, 158 drums oil, 100 cases linseed oil, 100 cases liquid exterminator, 53 pieces black iron pipe, 40 coils rope, 50 pieces steel angles, 40 cases stovepipe, for stock; and a miscellaneous cargo, the whole consisting of 2,132 packages, weighing 180 tons.

Magdalena, September 24, from New York, with 6 pieces rock skips for Atlantic Division;

Ballachmyle, September 24, from New York, with 107,300 bags cement for Atlantic and Pacific Divisions; 6 cases benzine for stock.

Lewis Luckenbach, September 24, from New York, with 41 crates castings for Atlantic Division.

San Mateo, September 25, from New Orleans, with 200 drums gasoline and 6,411 pieces yellow pine lumber for stock.

Navajo, September 26, from San Francisco, with 1,340 bales alfalfa hay for stock.

Turrialba, September 28, from New Orleans, with 12 crates concrete mixers for Pacific Division; 425 pieces white oak lumber, 8,822 pieces yellow pine lumber for Mechanical Division; 45 pieces white oak lumber, 13,894 pieces yellow pine lumber, 24 pieces piling, 75 bales Sucrene feed, 75 bags cotton seed meal, 357 bales rice straw, 6 cases paint, for stock.

Almirante, September 28, from New York, with 250 cases toilet paper, 100 kegs bolts, 36 pieces steel, 76 kegs track bolts, for stock.

Rainfall from September 1 to 30, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	2.22	22	6.03
Balboa	2.01	22	8.66
*Miraflores	1.21	28	8.30
Pedro Miguel	1.56	24	8.31
Rio Grande	1.90	30	6.63
Central Section—			
Culebra	1.50	30	5.97
*Camacho	1.92	30	6.97
Empire	.83	30	5.46
Gamboa	.83	25	5.20
*Juan Mina	1.92	25	8.56
Alhajuela	2.22	25	9.29
*El Vigia	1.83	28	7.64
*Gorgona	.95	22	6.41
San Pablo	.66	26	3.82
Tabernilla	1.42	26	4.47
Bohio	1.27	17	5.30
*Monte Lirio	2.38	25	11.19
Atlantic Section—			
Gatun	.70	25	4.33
*Brazos Brook	3.20	25	10.32
Cristobal	2.27	25	11.62
Porto Bello	2.73	17	†17.55

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., September 29.

Stages of the Chagres

Maximum heights of the Chagres River for the week ending midnight, Saturday, September 30, 1911. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Sept. 24	127.6	93.9	45.9	14.5	14.4
Mon., Sept. 25	127.8	94.0	47.7	15.0	14.6
Tues., Sept. 26	128.4	94.3	47.0	15.0	14.8
Wed., Sept. 27	127.2	94.2	47.3	15.2	15.0
Thurs., Sept. 28	129.2	94.9	48.6	15.3	15.1
Fri., Sept. 29	127.4	94.0	48.2	15.8	15.5
Sat., Sept. 30	127.4	93.7	46.7	15.7	15.6
Height of low water	125.0	92.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending October 11, 1911 (75th meridian time):

DATE.	High.	Low.	High.	Low	
	A.M.	A.M.	P.M.	P.M.	......
October 5	1.40	7.50	2.00	8.05	......
October 6	2.18	8.30	2.40	8.47	......
October 7	2.53	9.10	3.15	9.25	......
October 8	3.30	9.47	3.50	10.05	......
October 9	4.05	10.25	4.30	10.40	......
October 10	4.45	11.05	5.10	11.20	......
October 11	5.25	11.45	5.50	......	......

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line; the Panama Railroad Company's dates being subject to change.

NEW YORK TO CRISTOBAL.

Panama	P. R. R.	Friday	Sept. 29
Cristobal	P R. R.	Wednesday	Oct. 4
Advance	P. R. R.	Thursday	Oct. 5
Colon	P. R. R.	Thursday	Oct. 12
Allianca	P. R. R.	Wednesday	Oct. 18
Panama	P. R. R.	Tuesday	Oct. 24
Advance	P. R. R.	Monday	Oct. 30

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Thursday	Oct. 12
Advance	P. R. R.	Tuesday	Oct. 17
Colon	P. R. R.	Tuesday	Oct. 24
Allianca	P. R. R.	Monday	Oct. 30
Panama	P. R. R.	Sunday	Nov. 5
Advance	P. R. R.	Saturday	Nov. 11

NEW YORK TO COLON.

Santa Marta	U. F. C.	Thursday	Sept. 28
Prinz Sigismund	H.-A.	Friday	Sept. 29
Clyde	R. M.	Saturday	Sept. 30
Metapan	U. F. C.	Thursday	Oct. 5
Prinz Joachim	H.-A.	Saturday	Oct. 7
Zacapa	U. F. C.	Thursday	Oct. 12
Prinz Eitel Friedrich	H.-A.	Friday	Oct. 13
Atrato	R. M.	Saturday	Oct. 14
Almirante	U. F. C.	Thursday	Oct. 19
Prinz August Wilhelm	H.-A.	Saturday	Oct. 21
Santa Marta	U. F. C.	Thursday	Oct. 26
Prinz Sigismund	H.-A.	Friday	Oct. 27
Thames	R. M.	Saturday	Oct. 28
Metapan	U. F. C.	Thursday	Nov. 2

COLON TO NEW YORK.

Almirante	U. F. C.	Thursday	Oct. 5
Prinz August Wilhelm	H.-A.	Tuesday	Oct. 10
Santa Marta	U. F. C.	Thursday	Oct. 12
Prinz Sigismund	H.-A.	Saturday	Oct. 14
Thames	R. M.	Tuesday	Oct. 17
Metapan	U. F. C.	Thursday	Oct. 19
Prinz Joachim	H.-A.	Tuesday	Oct. 24
Zacapa	U. F. C.	Thursday	Oct. 26
Prinz Eitel Friedrich	H.-A.	Saturday	Oct. 28
Trent	R. M	Tuesday	Oct. 31
Almirante	U. F. C	Thursday	Nov. 2
Prinz August Wilhelm	H.-A.	Tuesday	Nov. 7

NEW ORLEANS TO COLON.

Heredia	U. F. C.	Wednesday	Sept. 27
Abangarez	U. F. C.	Saturday	Sept. 30
Cartago	U. F. C.	Wednesday	Oct. 4
Atenas	U. F. C.	Saturday	Oct. 7
Parismina	U. F. C.	Wednesday	Oct. 11
Turrialba	U. F. C.	Saturday	Oct. 14
Heredia	U. F. C.	Wednesday	Oct. 18
Abangarez	U. F. C.	Saturday	Oct. 21
Cartago	U. F. C.	Wednesday	Oct. 25
Atenas	U. F. C.	Saturday	Oct. 28
Parismina	U. F. C.	Wednesday	Nov. 1

COLON TO NEW ORLEANS.

Heredia	U. F. C.	Thursday	Oct. 5
Turrialba	U. F. C.	Thursday	Oct. 5
Cartago	U. F. C.	Thursday	Oct. 12
Abangarez	U. F. C.	Thursday	Oct. 12
Parismina	U. F. C.	Thursday	Oct. 19
Atenas	U. F. C.	Thursday	Oct. 19
Heredia	U. F. C.	Thursday	Oct. 26
Turrialba	U. F. C.	Thursday	Oct. 26

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; ships for New Orleans in the coastwise service on Thursdays at 4 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

Auction Sale of Calves.

On Saturday, October 7, 1911, at 10 a. m., there will be sold at public sale to the highest bidder at the Ancon Hospital dairy, three or four calves, about one month old. The dairy is located near the insane asylum in the rear of the hospital grounds. The terms of the sale will be cash.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, OCTOBER 11, 1911. No. 7.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Test of Lock Gates.

The work of erecting the four leaves of the upper guard gates at Gatun has so far advanced that practically all the structural material is in place and the rivetting and calking are now in progress. The bridges which span the lock chambers, from which structural material is lowered for the construction of the gate leaves, have been moved over the site of the upper operating gates, and the erecting of material will advance on those gates while the rivetting and calking are being completed on the guard gates. The leaves of the guard gates are 54 feet 8 inches high, and those of the upper operating gates, 77 feet.

Under the contract fifty per cent of the price of the gates is paid when the material is accepted by the Commission's agent in the States, and 45 per cent after the gates have been erected, and have stood the tests prescribed. It is probable therefore that the tests on the guard gates will be made by the contractor as soon as the gates are ready. Most important of these is that for watertightness of the gate leaves. The leaves are so constructed that the lower half will be an air chamber perfectly water tight, giving so much buoyancy, with the lock half full of water, that about three-fourths of the weight of the gates will be taken up by the water, and approximately only one-fourth will be borne by the pintle at bottom of leaf and pin at top of leaf which is held by a heavy yoke securely anchored in the lock walls. In order to overcome the effect of the buoyancy when the lock is full of water, which would have a tendency to lift the leaves out of their sockets, the upper half of the gate will fill with water. To this end the downstream face of each leaf will be calked water tight, but holes will be left in the upper half of the upstream face, so that, as the water rises, the upper half will fill and act as a weight. In making the test for the watertightness of the air chamber, it is proposed to fill the chamber with water and then to remedy any defects in the calking that may become apparent from the test.

South Guide Wall of Gatun Locks.

The laying of concrete in the cellular portion of the upper guide wall at Gatun Locks was begun on September 30. The entire wall extends into the lake 1,500 feet from the upper guard gates, and the south or outermost 850 feet of it are founded on light earth, bed rock being about 150 feet below the surface. On account of the character of this foundation the southern portion is being constructed upon piles, driven from 35 to 70 feet into the ground, and to make the weight upon them as light as possible the wall is being made a reinforced concrete cellular structure.

The wall will be founded on a concrete slab from 4 to 5 feet thick laid over the tops of the piles, and will be 58 feet wide and 67 feet high above the ground, which is at 32 feet above sea level, the top therefore being at 14 feet above the normal level of the lake. The outside shell will be a reinforced concrete wall two feet thick, and within this there will be two 18-inch walls running lengthwise of the guide wall and 17 feet apart, and 50 walls 18 inches thick running the width of the guide wall at regular intervals of 15 feet. Thus the interior will consist of a series of cells 15 by 17 feet in dimension separated by 18-inch partitions.

It is estimated that 35,000 cubic yards of concrete will be placed in the cellular part of the wall, and it is necessary to expedite the construction so that it may be completed to a height of 23 feet, elevation 55 feet, before April, 1912, when the surface of Gatun Lake will begin to rise, reaching 55 feet above sea level about August, 1912. The chief obstacle to rapid progress is placing the forms, as a thousand yards of concrete a day could be supplied if a place were available to put it in place. Both the construction and auxiliary mixing plants will be used in supplying the concrete. A trestle 850 feet long has been run from the west side of the locks alongside the site of the guide wall, and cars from the construction plant will deliver concrete on the west side of the wall to be placed by locomotive crane. On the east side concrete will be delivered from the auxiliary plant and placed by locomotive crane.

Canal Work in September.

The grand total of Canal excavation to October 1 was 150,723,962 cubic yards, leaving to be excavated 44,599,417 cubic yards, or less than one-fourth of the entire amount for the completed Canal.

The total for September was 2,538,764 cubic yards, as compared with 2,687,088 cubic yards in September, 1910, and 2,836,385 cubic yards in September, 1909. Practically all the excavation was "work excavation," there being only 7,561 cubic yards of "plant excavation."

The dry excavation amounted to 1,566,102 cubic yards, and was principally by steam shovels. The dredges removed 892,373 cubic yards, and 80,289 cubic yards were sluiced, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 498,410 cubic yards. Of this total, 77,976 cubic yards were dry excavation, and the remainder was removed by the dredges in the Atlantic entrance.

The total excavation in the Central Division was 1,361,445 cubic yards, all of which was from the prism. The amount taken from Culebra Cut was 1,340,173 cubic yards, the greatest excavation for any September in the history of the Cut.

In the Pacific Division, the total excavation was 678,909 cubic yards, 471, 939 cubic yards of which were taken out by the dredges at the Pacific entrance, and 70,289 by the hydraulic excavation plant working immediately below Miraflores Locks.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work." Excavation.	"Plant." Excavation.	Total excavation.
Dry excavation—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Locks, Dam and Spillway	3,489	....	3,489
Mindi	74,487	....	74,487
Total	77,976	....	77,976
Wet excavation—			
Atlantic entrance	420,434	....	420,434
Locks, Dam and Spillway	....	....	....
Total	420,434	....	420,434
Total wet and dry excavation	498,410	....	498,410
CENTRAL DIVISION.			
Dry excavation—			
Culebra Cut	1,340,173	....	1,340,173
Chagres section	11,272	....	11,272
Wet excavation—			
Chagres section	10,000	....	10,000
Total	1,361,445	....	1,361,445
PACIFIC DIVISION.			
Dry excavation—			
Locks, Dams and Spillways	99,584	....	99,584
Diversions	37,097	....	37,097
Prism, south of Pedro Miguel Locks	....	....	....
Total	136,681	....	136,681
Wet excavation—			
Pacific entrance	534,667	7,561	542,228
Miraflores Locks	....	....	....
Total	534,667	7,561	542,228
Total wet and dry excavation	671,348	7,561	678,909
TOTAL CANAL EXCAVATION.			
Dry excavation	1,566,102	....	1,566,102
Wet excavation	965,101	7,561	972,662
Total	2,531,203	7,561	2,538,764

NOTES OF PROGRESS.

(*Continued.*)

Mean rainfall along Canal (eleven stations), 6.35 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc.; that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks.	57,298	71,462	128,760
Concrete laid in dams and spillways.......	3,650	....	3,650
Fill placed in dams ..	456.335	44,941	501,276

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 70 per cent completed, 157,842 cubic yards, out of a total of 225,000, having been placed at the close of work on October 7. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
October 2..............	164	8.00	1
October 3..............	86	4.30	1
October 4..............	80	4.00	1
October 5..............	148	7.00	1
October 6..............	148	7.00	1
October 7..............	142	7.30	1
Total..................	768	38.00	1
Previously reported....	157,074		
Grand total...........	157,842		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending October 7, follows:

DATE.	Hours worked.	Cubic Yards.
October 2........................	4.13	1,765
October 3........................	5.18	1,903
October 4........................	3.32	1,454
October 5........................	4.01	1,180
October 6........................	4.56	1,864
October 7........................	4.04	1,626
Total........................	26.04	9,792

Ancon Crusher.

A statement of rock crushed at the Ancon quarry during the week ending October 7, follows:

DATE.	Hours worked.	Cubic Yards.
October 2........................	8.00	3,237
October 3........................	6.40	2,717
October 4........................	7.10	2,495
October 5........................	7.25	2,634
October 6........................	7.55	2,686
October 7........................	7.35	2,835
Total........................	44.40	16,604

Track Layout in South End of Culebra Cut.

A long trestle is under construction in the south end of Culebra Cut for the purpose of making a cross-over to the bottom of the incline up which trains may move from all parts of the south end to the tracks leading to the dumps. This will make it possible to construct a new incline on the east side, and to complete the excavation on the east side of the Cut from Paraiso bridge to Cucaracha. When the excavation has advanced to the proper point, a retaining wall will be constructed across the front of Paraiso slide. When this wall is brought up to the proper height a permanent incline with double tracks will be constructed outside the prism, and this will be used by all trains until the excavation in the south end of the Cut is completed.

The tug *Cocoli* has received a general overhauling, having had two new feed pumps installed, its high-pressure cylinder bored out, a new piston fitted, its boiler renovated, and its bunkers scaled and painted.

CONCRETE WORK IN THE LOCKS.

Over 67 per cent of the concrete for the locks is in place, the amount at the close of work on October 7, being 2,827,235 cubic yards, out of a total of approximately 4,199,400. A total of 31,064½ cubic yards of concrete was laid in the locks during the week ending October 7.

GATUN LOCKS.

Over 81.5 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on October 7, being 1,635,164 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending October 7, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
October 2..........................	848	14.36	4	656	8.40	2	36	1,540
October 3..........................	1,212	24.10	4	622	8.40	2	32	1,866
October 4..........................	1,170	17.20	4	244	5.40	2	56	1,470
October 5..........................	1,316	20.58	4	240	5.40	2	100	1,656
October 6..........................	1,676	25.02	4	290	5.40	2	56	2,022
October 7..........................	1,674	26.30	4	482	6.10	2	56	2,212
*Portable mixers..............	....	....	......	358½	....	......	....	358½
Total..........................	7,896		4	2,892½		2	336	11,124½
Previously reported..........	....	....	......	....	....	......	....	1,624,039½
Grand total..................	....	....	......	....	....	......	....	1,635,164

*The 358½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days: October 2nd, 56; October 3rd, 35½; October 4th, 90; October 5th, 68; October 6th, 67; October 7th, 42.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 87 per cent completed, 735,440 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on October 7. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. ½-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
October 2..........................	494	14.50	2	330	21.00	3	....	824
October 3..........................	442	13.50	2	290	15.75	3	....	732
October 4..........................	408	12.00	2	257	13.75	3	....	665
October 5..........................	374	10.00	2	364	17.25	3	....	738
October 6..........................	382	11.00	2	417	22.25	4	....	799
October 7..........................	446	13.00	2	582	25.25	4	....	1,028
Totals..........................	2,546	74.00	2	2,240	115.25	3.33	....	4,786
Previously reported..............	....	....	......	....	....	......	4,411	730,654
Grand total....................	....	....	......	....	....	......	4,411	735,440

MIRAFLORES LOCKS.

Over 33.5 per cent of the concrete for the system of two twin locks at Miraflores was in place on October 7, the total amount on that date being 456,631 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. ½-cubic yard mixer.				Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Oct. 1....	12	.83	1	....	....	......	....	....	......	....	12
Oct. 2....	1,282	31.67	6	1,304	17.90	2	358	26.00	4	....	2,944
Oct. 3....	1,226	30.33	6	980	12.90	2	372	23.50	4	....	2,578
Oct. 4....	862	25.50	6	1,018	13.60	2	363	23.50	4	....	2,243
Oct. 5....	958	27.50	5	1,246	16.50	2	263	19.00	3	....	2,467
Oct. 6....	560	14.33	5	1,262	17.00	2	365	24.00	3	....	2,187
Oct. 7....	1,240	29.33	6	1,130	16.33	2	353	23.50	4	....	2,723
Total...	6,140	159.49	5	6,940	94.23	2	2,074	139.50	3.67	....	15,154
Previously reported.	....	....	......	....	....	......	....	....	......	3,693	441,477
Grand total...	....	....	......	....	....	......	....	....	......	3,693	456,631

STEAM SHOVEL RECORDS.

Work in Culebra Cut and on P. R. R. Relocation.

During the month of September the total amount of material excavated in the Central Division was 1,361,445 cubic yards, of which 274,914 cubic yards were classified as earth, and 1,086,531 cubic yards as rock. Of this quantity 1,339,437 cubic yards were removed by steam shovels, 736 cubic yards by bucket cranes, contractors removed 10,000 cubic yards by sluicing, and 11,272 cubic yards by hand.

The high record for the month was made by shovel No. 207, working 13 days in the Culebra District and 12 days in the Empire District, which excavated 47,424 cubic yards of rock. The second best record for the month was made by shovel No. 231, working 25 days in the Culebra District, which excavated 46,608 cubic yards of rock.

The best record for a shovel of the seventy-ton class was made by shovel No. 109, working 24 days in the Culebra District, which excavated 36,352 cubic yards of rock and earth.

Shovel No. 254, working in the Culebra District, made a high record for one day by excavating 3,268 cubic yards of rock on September 14.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month and for one day are shown below:

BEST RECORDS FOR THE MONTH.

EMPIRE DISTRICT.

Shovel No.	Cubic Yards.			
	Earth.	Rock.	Total.	No. of days at work.
229		37,488	37,488	25
227		32,205	32,205	25
215	5,864	24,998	30,862	25

CULEBRA DISTRICT.

Shovel No.	Earth.	Rock.	Total.	No. of days at work.
230		44,595	44,595	25
231		46,608	46,608	25
254		46,095	46,095	23

PEDRO MIGUEL.

Shovel No.	Earth.	Rock.	Total.	No. of days at work.
122	25,102		25,102	25

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
258	Empire	Sept. 22	Rock	3,008
232	Empire	Sept. 28	Rock	2,635
232	Empire	Sept. 18	Rock	2,377
254	Culebra	Sept. 14	Rock	3,268
230	Culebra	Sept. 25	Rock	3,141
256	Culebra	Sept. 27	Rock	2,972
122	Pedro Miguel	Sept. 14	Earth	1,520

Relocated Line of Panama Railroad.

The total steam shovel excavation on the relocated line of the Panama railroad amounted to 343,770 cubic yards in September.

The best month's record was made by steam shovel No. 262, working on the Monte Lirio section, which excavated 10,000 cubic yards of earth and 49,500 cubic yards of solid rock, a total of 59,500 cubic yards.

In the 70-ton class, the best month's record was made by steam shovel No. 128, working on the Monte Lirio section, which excavated 37,050 cubic yards of earth.

The best day's record for shovels with 5-yard dippers was made by steam shovel No. 262, working on the Monte Lirio section, which excavated 4,100 cubic yards of rock on September 21.

The best day's record for 70-ton shovels was made by steam shovel No. 128, working on the Gatun section, which excavated 1,900 cubic yards of earth on September 14.

Month's records are by place measurement, and day records are by car measurement. All material was loaded in 10-yard dump cars.

BEST RECORDS FOR THE MONTH.

Shovel No.	Location.	Cubic Yards by Cross Section.			
		Days worked.	Earth	Rock.	Total.
262	M. Lirio	25	10,000	49,500	59,500
263	Gatun	18		51,350	51,350
128	M. Lirio	24	37,050		37,050
266	Paraiso	24	18,300	18,300	36,600
123	Empire	25	34,235	2,000	36,235

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
262	Monte Lirio	Sept. 21	Rock	4,100
263	Gatun	Sept. 13	Rock	3,440
257	Gatun	Sept. 8	Rock	3,410
266	Paraiso	Sept. 16	Earth and rock	2,400
128	Gatun	Sept. 14	Earth	1,900
117	Gatun	Sept. 7	Rock	1,860

Total steam shovel output during the month of September, 343,770 cubic yards.

Total number of steam shovel working days, 237.

Average output per working day, 1,451 cubic yards.

Work of the Dredge "Marmot."

The French ladder dredge *Marmot*, which has been working in the Pacific entrance to the canal, has been placed on the gridiron at Balboa shops for minor repairs. This is the first time the *Marmot* has been on the gridiron since being placed in commission, in May, 1909. During that period the dredge has excavated 3,309,459 cubic yards of earth and rock. The highest record for one month, made in December, 1910, was 219,795 cubic yards. When the *Marmot* returns to commission it will be operated on single shift, working only from mean to low tide and from low to mean, as the excavation has so far advanced that it is impossible for the dredge to reach bottom at high tide. By the end of October all four of the dredges operating in the Pacific channel will be on single shift.

Excavation at San Pablo and Tabernilla.

When the steam shovels were working in the lake region at San Pablo and Tabernilla they could not complete the excavation because the canal channel runs across the line of the Panama railroad in two places. When the present line of the railroad is cut in February and trains are running over the relocation, these two pieces of excavation can be completed, and the Central Division is now preparing for this work. Drills will begin work this week so that sufficient material may be blasted and broken up before the shovels begin to dig. It is expected that a shovel will begin operating at San Pablo about the first of December, and that another will begin on January 1, and two others about February 15, making four shovels in all on this job. The work will be finished about the end of April. Until after the trains begin to run over the relocated line the old dumps at San Pablo will be used for disposal of the material excavated, and after that it will be dumped into the river. River dumping is the more economical, but it is not thought safe to obstruct the channel until after the new line of the railroad is in use and the river assumes its dry season flow. About 258,000 cubic yards of rock and earth must be dug out at San Pablo.

At Tabernilla the material to be removed is a part of the right of way of the railroad, and work there cannot begin until after the relocated line is opened. One shovel will do this job, which amounts to about 13,000 cubic yards.

Snubbing Posts

A requisition has been made on the Washington office for 585 snubbing posts at which ships may tie up in the locks or approaches. These posts are to be a 1¼-inch shell casting anchored 6 feet in the masonry by a 1¼-inch bolt. After they are anchored they will be filled with concrete. There are two types, one of which will project 36 inches above the masonry of the lock walls; and the other to project 14 inches. On the approach walls they will be from 50 to 60 feet apart and on the lock walls will be staggered every 100 feet. The large posts will be 26 inches in diameter at the base and the small ones 22 inches.

Work of Unloaders in Central Division.

The following statement shows the number of Lidgerwood cars unloaded by the Central Division during the month of September, 1911:

Location.	No. of unloaders.	No. of trains.	No. of cars.
Balboa	3	1,019	20,380
Miraflores	3	762	15,240
Gamboa	4	1,049	22,049
Total	10	2,830	57,669

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of September, follows:

Destination.	Number Cars.	Cubic Yards.
Pacific Division	2,429	38,099
Central Division	33	495
Atlantic Division	16	378
Mechanical Division	4	100
Quartermaster's Department	7	175
Panama railroad	6	150
Miscellaneous	37	600
Total	2,532	39,997

Work on the Dumps.

Material from the Culebra Section of the Central Division was disposed of on the dumps at Miraflores and Balboa during the months of September, 1910, and September, 1911, as follows:

Disposition and Mode.	1911	1910
Balboa and vicinity, Lidgerwood trains	1020	998
Balboa and vicinity, Western Dump trains	99	68
Miraflores and vicinity, Lidgerwood trains	769	750
Miraflores and vicinity, Western dump trains	3	8
Total Lidgerwood trains	1,789	1,748
Total, Western dump trains	102	76
Total yardage, cubic yards	712,820	672,170

It will be seen that an average of 75 trains of material per day, aggregating 28,512.8 cubic yards per day, were disposed of on the Miraflores and Balboa dumps.

The New United Methodist Church at Pedro Miguel will be dedicated on October 22.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M THS.	CULEBRA SECTION.*								CHAGRES SECTION.**				
	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
Jan....	....	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	....	169,447	389,399	175,802	255,385
Feb....	....	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	....	200,145	450,182	286,309	219,550
March .	....	132,840	239,178	815,270	1,290,885	1,434,597	1,509,728	1,728,748	....	324,233	619,491	484,846	297,339
April ..	....	126,749	213,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	....	329,483	510,020	428,777	102,103
May....	27,556	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	....	235,902	386,170	248,974	29,783
June ...	32,551	76,905	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	....	322,145	275,900	164,389	32,288
July ...	31,599	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	....	345,757	233,897	166,106	22,284
August	35,056	49,210	244,823	786,866	1,171,927	1,173,370	1,377,714	1,442,402	2,900	368,683	231,543	234,404	21,892
Sept ...	25,220	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	1,340,173	21,546	346,948	235,818	234,290	21,272
Oct ...	19,695	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	....	25,627	424,911	221,409	271,409	....
Nov....	28,860	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	....	44,044	336,390	93,619	260,882	....
Dec....	42,935	70,630	307,689	1,025,485	1,210,046	1,152,022	1,211,400	....	98,652	383,948	105,044	197,481	....
Totals..	243,472	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	12,729,340	192,769	3,787,992	3,752,492	3,153,669	1,001,896

ATLANTIC DIVISION. PACIFIC DIVISION.¶

MONTHS.	ATLANTIC DIVISION.						PACIFIC DIVISION.¶							
	COLON (MINDI)†		GATUN LOCKS, DAM AND SPILLWAY.††				PEDRO MIGUEL LOCKS.‡				MIRAFLORES LOCKS, DAMS AND SPILLWAY.‡‡			
	1909.	1911.	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1911.
January ...	45,664	....	292,155	102,690	125,011	65,889	....	83,726	27,320	15,690	7,203	61,202	31,479	48,744
February	46,046	47,102	282,797	95,031	123,738	50,511	....	58,242	9,486	6,809	39,046	53,689	15,300	12,936
March....	70,713	49,734	374,598	90,051	132,007	51,431	....	95,624	6,784	674	73,194	51,417	18,184	72,739
April	74,368	74,030	373,456	70,009	103,243	12,548	....	101,365	9,129	255	98,943	60,060	12,148	79,751
May.......	71,407	64,482	266,747	52,786	82,958	17,677	....	57,523	10,405	5,905	73,023	47,588	20,250	57,975
June......	80,101	59,157	244,951	36,556	88,088	4,840	13,228	70,971	8,420	7,454	68,691	55,653	21,994	38,023
July.......	82,378	58,125	213,359	39,058	95,503	6 897	22,648	77,503	4,410	6,273	104,369	50,999	11,990	97,884
August ...	66,249	65,041	188,262	40,346	99,737	22,558	22,217	58,025	12,789	220	94,248	35,446	17,548	102,249
Sept'mber	61,437	74,487	145,990	49,945	103,040	3,489	28,833	48,825	10,405	3,472	90,923	31,803	8,590	96,112
October...	72,643	....	154,064	57,321	118,327	....	48,875	39,002	7,433	....	74,700	25,349	9,850	....
November	42,009	....	118,278	63,452	94,552	....	55,401	20,207	10,636	....	52,930	18,644	9,400	....
December	....	....	119,904	96,590	72,030	....	65,578	28,342	11,195	....	69,650	20,083	17,906	....
Totals..	713,015	492,158	2,774,561	793,835	1,238,234	235,840	256,780	739,355	128,412	46,752	846,920	511,933	194,639	606,413

*Total to October 1, 1911, 69,635,273 cubic yards.

**Total to October 1, 1911, 11,888,818 cubic yards, of which 177,247 cubic yards were removed by sluicing.

†Total to October 1, 1911, 1,968,979 cubic yards; in this total are included 172,851 cubic yards removed in 1907, and 590,955 cubic yards removed in 1908.

††Total to October 1, 1911, 6,409,277 cubic yards; in this total are included 26,628 cubic yards excavated October to December, 1906, and 1,340,179 cubic yards in 1907.

‡Total to October 1, 1911, 1,171,299 cubic yards.

‡‡Total to October 1, 1911, 2,159,905 cubic yards.

¶There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 572,831 cubic yards at different points in prism to Oct 1, 1911. There were also 172 cubic yards removed by steam shovels outside of prism during October, 1908.

WET EXCAVATION.

MONTHS.	ATLANTIC DIVISION.							PACIFIC DIVISION.								
	ATLANTIC ENTRANCE.§					GATUN LOCKS †		PACIFIC ENTRANCE.§§							Miraflores Locks.§§§	
	1907.	1908.	1909.	1910.	1911.	1908.	1909.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1910.	1911.
Jan..	111,100	490,701	521,050	510,055	520,181	......	97,043	....	95,940	94,710	460,250	469,529	518,936	379,810	....	89,243
Feb.	110,002	427,722	444,910	493,448	455,318	......	132,291	....	95,940	93,480	663,519	671,477	285,791	386,866	....	87,335
Mar.	84,145	546,886	461,208	412,325	391,736	......	141,838	....	116,820	92,319	783,281	865,696	462,588	639,761	....	......
April	69,889	496,366	470,635	190,574	492,579	.....	17,938	....	110,700	104,855	676,539	731,767	534,322	439,622	....	......
May .	133,847	564,386	315,370	447,578	514,178	......	52,011	....	112,340	122,157	530,466	720,753	484,509	548,047	....	......
June.	124,118	572,749	182,575	458,021	452,098	......	38,829	50,676	62,697	133,575	656,621	844,685	475,486	576,100	....	......
July..	109,922	625,497	348,451	423,092	425,195	......	....	41,533	98,400	108,338	696,170	733,181	515,782	520,692	....	......
Aug..	194,297	638,217	422,846	508,829	367,456	...	....	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....	......
Sept .	403,842	624,776	410,574	451,873	420,434	......	....	114,308	105,780	153,975	750,080	662,976	473,585	534,667	....	......
Oct ...	415,120	505,260	314,778	549,788	....	......	....	81,836	97,170	357,122	762,276	720,920	467,873	....	40,000	......
Nov ..	422,797	570,832	457,889	600,708	....	......	....	71,176	92,988	365,423	609,089	627,791	425,370	....	47,444	......
Dec..	442,835	679,604	489,121	482,370	....	8,583	....	71,094	90,528	349,551	729,960	727,460	387,034	....	68,681	......
Tot'ls	2,621,914	6,742,996	4,839,407	5,528,661	4,039,175	8,583	479,950	485,153	1,191,233	2,143,789	8,056,025	8,399,498	5,538,745	4,655,806	156,125	176,578

§Total to Oct. 1, 1911, 25,199,618 cu. yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906.

§§Total to October 1, 1911, 30,470,249 cubic yards. Of this amount, 487,664 yards were removed by monitors.

§§§Total to October 1, 1911, 642,350 cubic yards; in this total are included 309,647 cubic yards excavated in 1909.

†Total to October 1, 1911, 488,533 cubic yards. There were also 38,425 cubic yards removed by dredges at Gatun Dam site in 1907.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.			PEDRO MIGUEL LOCKS.			MIRAFLORES LOCKS.		
	1909.	1910.	1911.	1909.	1910.	1911.	1909.	1910.	1911.
Jan	....	54,136	72,919	....	16,273	38,513	......	....	24,018
Feb.................	......	55,696	72,103	....	13,218	37,011	......	146	20,896
March	....	60,998	86,884	....	18,793	44,716	......	314	31,173
April...............	....	63,227	67,361	....	24,522	28,635	......	13	38,758
May................	....	74,273	67,844	....	29,576	19,135	......	27	36,154
June	....	89,401	55,305	....	30,631	18,243	......	1,603	26,536
July	....	84,001	71,046	....	41,464	19,906	28	3 672	32,840
Aug................	1,298	85,686	66,928	....	51,264	20,736	74	6,030	57,003
Sept................	12,294	76,720	57,298	2,370	50,702	15,379	......	19,133	56,083
Oct.................	29,378	86,949	....	8,310	61,422	....	......	22,159	....
Nov................	30,270	75,152	....	10,169	64,248	....	......	23,871	....
Dec................	42,832	80,212	....	13,007	42,834	....	......	21,533	....
Total............	116,072	886,451	617,688	33,856	444,947	242,274	102	97,501	323,461

From March 17, 1909, to October 1, 1911, there were placed in the Spillway of Gatun Dam 158,982 cubic yards of concrete, including 3,650 cubic yards placed in Sept., 1911; in Miraflores Dam, there were placed 321 cubic yards up to October 1, 1911.

FILL PLACED IN DAMS.

M'THS.	GATUN.*				PEDRO MIGUEL.†		MIRAFLORES.‡			
	1910.		1911.		1910.	1911.	1910.		1911.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan...	178,254	236,994	211,992	218,690	... .	......	....	28,151	89,243	24,685
Feb..	292,215	271,788	301,733	211,008	11,510	......	....	1,438	87,335	32,404
Mar..	210,387	332,661	342,800	255,047	22,860	......	......	5,385	25,131	23,940
April	242,440	263,437	368,658	205,130	31,394	......	....	....	14,100	67,260
May..	249,283	194 868	419,348	207,751	23,572	......	....	6,480	18,353	30,032
June .	384,166	258,653	432,008	227,996	1,350	......	....	7,356	53,858	28,315
July..	462,092	180,111	324,947	201,996	......	14,865	....	4,290	24,957	54,415
Aug..	406,606	229,774	259,389	232,426	......	24,812	....	10,898	25,000	72,203
Sept..	457,637	223,102	261,838	194,497	......	4,052	....	11,220	6,409	34,480
Oct...	480,732	259,619	....	....	......	......	40,000	14,370	....	....
Nov..	129,666	266,105	....	....	......	......	47,444	8,960	....	....
Dec. .	243,121	169,575	.. ..	....	......	...	68,681	39,224	....	....
T'tal	3,736,599	2,886,687	2,922,713	1,954,541	90,686	43,729	156,125	137,772	344,386	367,734

*Dry fill begun in January, 1907, and 2,096,477 cubic yards of wet, and 3,241,418 cubic yards of dry fill were placed in 1907, 1908 and 1909.

†170,166 cubic yards placed in dams up to December, 1909, inclusive.

‡138,587 cubic yards of wet fill and 472,091 cubic yards of dry fill were placed in dams up to December, 1909.

CANAL EXCAVATION TO DATE.

By French Companies........................		78,146,960
French excavation useful to present Canal........		29,908,000
By Americans—		
Dry excavation........................	93,707,540	
Dredges........................	57,016,422	
Total........................		150,723,962
May 4 to December 31, 1904........	243,472	
January 1 to December 31, 1905........	1,799,227	
January 1 to December 31, 1906........	4,948,497	
January 1 to December 31, 1907........	15,765,290	
January 1 to December 31, 1908........	37,116,735	
January 1 to December 31, 1909........	35,096,166	
January 1 to December 31, 1910........	31,437,677	
January 1 to October 1, 1911........	24,316 898	

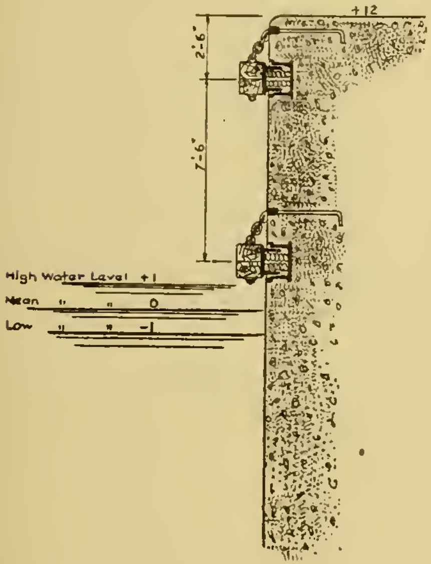
TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation........................	8,378,256	34,104,832	121,891	13,122,990
Dredges........................	25 726 576		13,001,099	
Central—				
Culebra Cut........................	69,635,273	81,524,091	19,808,732	20,277,205
All other points........................	11,888,818		468,473	
Pacific—				
Dry excavation........................	3,982,440	35,095,039	2,949,640	11,199,222
Dredges........................	31,112,599		8,249,582	
Grand totals........................		150,723,962		44,599,417

FENDERS FOR LOCK APPROACH WALLS.

Method of Distributing Force of Blow Caused by Ships Bumping Walls.

Ships passing through the locks will approach under their own steam, and will anchor until the towing locomotives can take them in tow for passage through the locks. The approach is formed between a section of the center wall, extending into the canal from 1,445 to 1,700 feet from the first gate, and flare or wing walls, which are a continuation of the side walls. These walls will be fitted with wooden fenders composed of 12 by 16 inch stringers running longitudinally along the sides, bearing every 5 feet against a casting supported by a nest of four springs. The sketches printed herewith show the location of the fenders on the walls, and the method of suspending them so that they will bear upon the springs. The purpose of the fenders is to take the stress caused by a ship bumping against the walls.



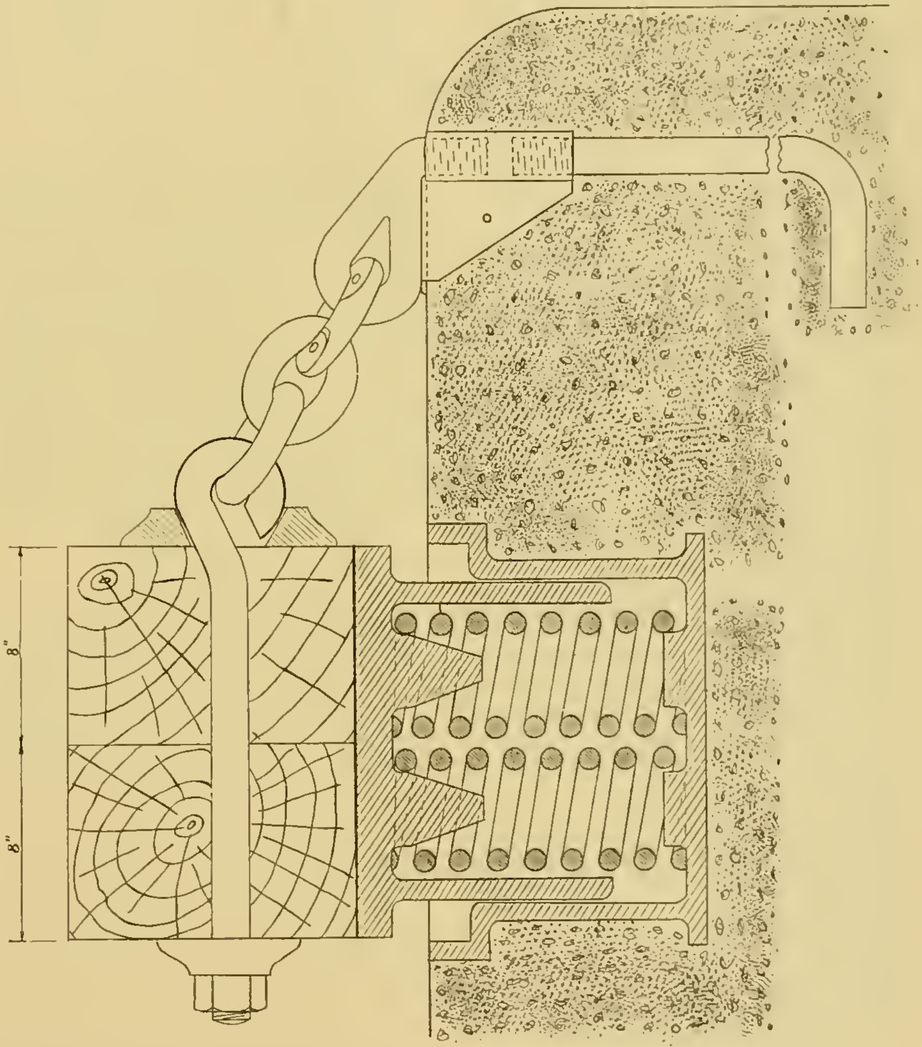
SECTION OF LOCK WALL SHOWING PARALLEL LINES OF BUFFERS.

A requisition has been made on the Washington office, and bids will presently be requested, for the following materials to be used in the fenders: 2,172 timber bolts, 1½ inches in diameter, with nut, 32,580 pounds; 2,172 two link chains for hangers, 21,720 pounds; 2,200 special links for hangers, 11,000 pounds; 762 bronze sleeves for hangers, 3,505 pounds; 762 eyes for hangers, 6,858 pounds; 762 anchor rods for hangers, 13,716 pounds; 25,608 helical springs, 640,200 pounds; 2,168 washers (top), 34,688 pounds; 2,168 washers (standard), 13,008 pounds.

In addition to these materials there will be required the following: 6,394 buffer castings, 1,381,104 pounds; 6,394 movable buffer castings, 1,278,800 pounds; 2,168 bearing blocks, 28,624 pounds; 51,152 bolts, 89,516 pounds; 12,788 plates, 60,104 pounds; 31,659 feet of buffers. The castings and bearing blocks will be made at Gorgona foundry.

The cups in which the springs are nested are anchored into the concrete of the walls by means of a flange on the top and bottom. These castings are 17¾ inches long, 14¾ inches wide, and 11½ inches deep, and weigh 216 pounds each. The movable buffer casting, which acts as a cap for the springs, is 16 inches long, 12⅝ inches wide and 10⅝ inches deep. The springs are to be made of carbon or chrome vanadium spring steel, will be 12¼ inches long when free, 9¼ inches when loaded, 3-1/16 inches inside, and 4 inches outside diameter, and must be capable of being compressed not less than 3 nor more than 3½ inches under a load of 7,500 pounds.

The stringers will hang by 3 links from eyes on the ends of steel anchor bolts, 1½ inches in diameter, embedded in the concrete 2 feet 5½ inches. Thus, free movement will be procured. The nests of springs will be spaced along the walls at 5-foot intervals, and the hangers for the wooden fenders will be at intervals of 15 feet. Each hanger bolt will splice two stringers so that each row of fenders will be a continuous line of stringers. The shortest of these will be on the upper approach wall at Gatun, 970 feet, and the longest on the lower approach wall at Gatun, 1,202 feet. There will be in all the locks 48 rows of buffers—double rows on each side of six middle approach walls, and on ten of the side or wing walls, and one row on the side wing walls at the upper end of Miraflores and Pedro Miguel locks.



SECTION THROUGH NEST OF SPRINGS, SHOWING CUPS IN WHICH SPRINGS ARE HELD, AND ALSO METHOD OF HANGING BUFFERS UPON THE WALL.

Docks at Pacific Entrance.

Work on the new concrete dock at Balboa, which is to be part of the permanent harbor improvements, has so far advanced that 30 of the 50 concrete caissons have been sunk to rock; 47 of the caissons are under way, leaving only 3 to set. Eighteen have been filled with concrete and on them the lower tie girders are now being placed. The average depth of the caissons is about 60 feet below mean tide level, the maximum being 62 feet and the minimum 58.

Great difficulty has been experienced at times in forcing the caissons down through the argillaceous earth. Laborers within the concrete cylinder remove the earth beneath it, sending it up in buckets hoisted by a donkey engine; but the lateral pressure from the outside prevented, in one case, the passage of the cylinder, even under a pressure of 40 tons in addition to its own weight. The earth was loosened by a system of high-pressure jets of water forced down the outside of the cylinder.

It is expected that work on the superstructure of the dock will begin not later than the first of November. So far, though such work is notably hazardous, only one man has been killed. He was a silver employe who, in attempting at night to cross one of the pits in a manner unauthorized, fell to the bottom.

The highway at Pedro Miguel, along the foot of the embankment upon which the relocated line of the Panama railroad runs, will be closed for about a month while rock is being dumped along the face of the embankment to make a toe that will prevent further sliding.

EXECUTIVE ORDER.

Associate Justice of the Supreme Court.

Under authority vested in me by law, and until otherwise provided by law or ordered, William H. Jackson is appointed an Associate Justice of the Supreme Court of the Canal Zone at a salary of six thousand dollars per annum, effective the day he enters on the duties of the office.

WM. H. TAFT.

THE WHITE HOUSE,
September 21, 1911.
[No. 1413.]

Attendance at Canal Zone Schools

The Canal Zone schools opened for the session of 1911-1912 on October 2. The total enrollment of white children for the first week was 1,004, which is only 18 less than the total net white enrollment for the entire session of 1910-1911.

Six hundred and fifty-four colored and native children were enrolled. This does not include two new schools, which will open at Ancon and Mandingo within the next few weeks, with an attendance, respectively, of about 130 and 30. In addition to these, new schools for colored and native children were opened at Miraflores, Cucaracha and Marajahl. A new school building was up at Mount Hope during the vacation period. The total enrollment in this division during the opening week last year was about 600.

Inasmuch as the attendance during the first weeks is, as a rule, noticeably less than for the remainder of the session, the total enrollment of 1,658 for the first week indicates that the attendance this session will be the largest yet attained by the schools of the Zone. The children are instructed by 43 white and 25 colored teachers.

A list of the schools, with the enrollment for the first week at each place of white, colored and native children, follows:

LOCATION.	White.	Colored.
Ancon	169	Not open yet.
Miraflores		22
Pedro Miguel	63	28
Paraiso	22	50
Cucaracha		22
Culebra	55	121
Empire	184	97
Las Cascadas	31	Not open yet.
Bas Obispo	23	
Cruces		20
Matachin		31
Gorgona	131	40
Gatun	162	52
Mount Hope		23
Marajahl		34
Cristobal	164	114
Total	1,004	654

All steerage passengers brought from or embarking at ports where cholera prevails, especially those from Marseilles and Genoa, are held in quarantine upon arrival in Colon a sufficient length of time to determine by bacteriological examination whether they are carriers of the cholera bacillus.

Society of the Chagres.

The first general meeting of the Society of the Chagres, held at the Strangers' Club Colon, Saturday the 7th instant, was attended by more than one hundred members. The constitution was ratified with certain minor amendments, and the following officers were elected to serve until the annual meeting in January: Col. W. C. Gorgas, President; Dr. Lloyd Noland, Vice President; Mr. C. A. McIlvaine, Secretary-Treasurer; Capt. R. E. Wood, Mr. John Burke, Mr. John J. Meehan and Mr. John K. Baxter, members of the executive committee. A sample pin manufactured by Tiffany was exhibited at the meeting. The pin engraved with a member's name and the date of his arrival on the Isthmus will cost $3.00. An order will be placed at once for pins for the 207 charter members of the Society now enrolled.

PERSONAL.

Major Chester Harding, with his wife and daughter, is returning from his annual vacation leave in the States on the *Cristobal*, which is due to arrive on October 12

Dr. J. C. Perry sailed on the *Mexico* for Chile on October 9, to attend the International Sanitation Conference to be held at Santiago.

Cranes at Balboa Docks.

The first of the eight 4-ton electric cargo-handling cranes for the "steel pier" at Balboa, contract for which was awarded the Maine Electric Company early in July, is expected to arrive at the port shortly. The first two to arrive will be placed at the southern end of the pier, immediately north of the derrick used for heavy cargo. Preparation for the new and heavier cranes has been made by reenforcing the girders at the southern end and laying a concrete floor, 12 inches thick, in which are embedded steel rails for the crane runway. The four-foot sill on the outer side of the pier, which forms the runway for the present 1½-ton cranes, has been removed at this point. This levelling will expedite the work of loading and unloading, especially at low tide.

Rodmen and Levelmen.

An examination to test the fitness of rodmen and levelmen for promotion will be held at Culebra on Sunday, October 29. Employes wishing to enter this examination should forward their applications through the head of the department or division in which they are serving to Mr. A. B. Nichols, chairman of the examining board, Culebra.

Copies of the Annual Report.

Employes of the Isthmian Canal Commission or Panama Railroad Company desiring copies of the Annual Report of the Commission for the fiscal year 1910-1911 should secure application blanks from the head of their department or division.

Masonic

The Masonic Club of Empire will entertain the Gorgona and Las Cascadas Masonic clubs at its next meeting, Wednesday evening, October 18. Special train service will be provided to leave Gorgona for Empire at 7 o'clock and returning will leave Empire at 11.30 o'clock.

I. B. of S. S. and D. M.

Local No. 19, International Brotherhood of Steam Shovel and Dredge Men, will hold its regular monthly meeting on Sunday, October 15, at the Empire lodge hall at 12.15 p. m.

Balboa Lodge No. 4, Knights of Pythias of Las Cascadas, will exemplify the rank of Knight on four candidates on Monday evening, October 16, 1911. All Pythians in good standing are invited to attend.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The standing of bowling teams in the league series on October 7, was as follows:

Team.	Played.	Won.	Lost.	P. C.
Empire	36	27	9	.750
Cristobal	36	23	13	.638
Gatun	36	19	17	.528
Gorgona	36	19	17	.528
Marines	36	16	20	.444
Culebra	36	4	32	.111

The moving picture schedule for the week October 16 to 21 is as follows: Cristobal, Monday; Gorgona, Tuesday; Gatun, Wednesday; Empire, Thursday; Culebra, Friday; Corozal, Saturday.

The standing of temas in the Isthmian Basket Ball League on October 7, was as follows:

Team.	Won.	Lost.	P. C.
Cristobal	1	0	1.000
Gorgona	1	0	1.000
Culebra	1	0	1.000
Gatun	0	1	.000
Empire	0	1	.000
Corozal	0	1	.000

The results of the games on October 7, were:

Cristobal 23; Gatun 12, at Gatun.
Culebra 24; Empire 8, at Culebra.
Gorgona 30; Corozal 10, at Corozal.

The games to be played on October 14, are:

Cristobal at Empire.
Gatun at Gorgona.
Corozal at Culebra.

CULEBRA.

The Married Men took four games from the Independents at volley ball on Tuesday evening. The Married Men have finished their games, having won two and lost two.

The Cristobal bowling team took three games from the Culebra team at Culebra on Saturday evening, the following being the line-up and scores:

Culebra.				Cristobal.			
Baumer	164	176	131	Wheeler	161	133	170
Crain	154	163	143	Blackburn	195	191	166
Dundas	154	192	162	Collins	167	191	176
Driscoll	140	188	178	Bullard	183	187	176
Herrington	126	161	181	Louch	190	209	152
Total	738	880	795		912	910	840

The first game of basket ball of the Isthmian league between Culebra and Empire was played on Saturday evening at Culebra with the following line-up and score: Culebra 24, Empire 8.

Empire.	Culebra.
King	Kaperski
Koperski, R	Bartlett, F
Adams	Bartlett, E
King, B	Barcroft
Giovalli	Wilmot
	Chapman
	Hepler

The following high scores were rolled during the week. Big Pins—Case 207, 200; Duckpins— Fox 100, 104, 107; McIlvaine 104; Case 106.

EMPIRE.

The following high scores were bowled during the week; Ten Pins—Parkis 204, 214, 202, 210, 204; Rodeigheiro 220; Gustaveson 201, 202; Giavolli 220; Huson 204; Snyder 207. Duckpins—Pulsifer 108; Grund 104, 105; McLeod 101; Marshall 110; Rodeigheiro 104, Pinney 105; H. King 103, 101; Dakin 102.

The league games bowled on Empire alleys on Saturday night, October 7, resulted as follows:

Empire.				Gatun.			
Gust'son	161	169	191	O'Meara	139	141	164
Spinks	155	156	181	Chamb'lain	176	154	152
Gorham	184	154	134	Galloway	165	148	152
Pearson	189	178	179	Severn	179	151	139
Huson	158	182	180	Barte	141	165	166
Total	847	839	865		800	759	755

On Saturday night, October 14, Cristobal will bowl on the Empire alleys in the league series.

The Cristobal basket ball team will play the Empire team on the 14th, at Empire. This is the first game of the league to be played at Empire and a lively contest is assured.

At the meeting of the Literary and Debating Society held on Friday, October 6, Dr. Orenstein of Panama gave a talk on "National Vitality." A general discussion followed. The next weekly meeting will be beld on Friday, October 13.

Twelve men have entered the billiard tournament which started on Monday, October 9.

GORGONA.

Gynasium class, which has been held on Monday and Thursday nights, has been discontinued, and those nights will be given over to basket ball practice, preceded by calisthenics.

The local team took three games at bowling from

Camp Elliot on Saturday night, on the local alleys. The scores were as follows:

Camp Elliot.				Gorgona.			
McDowell..	161	125	128	M. Van....	200	170	188
Wright.....	131		110	R. Van.....	162	145	110
Martins....	136	120		Roper......	148	148	142
Austin.....	148	159	170	Sexton.....	157	186	212
Clouse.....	154	128		Haggerty...	170	136	178
Caltado....		139	138				
Total....	730	671	673		837	785	830

Seventy-five people attended the song service on Sunday night. Mrs. Shady played the piano, and Ernest Reinhold the violin.

The following men are entered to date in the local billiard tournament, which will start October 16: Geo. W. Strong, R. A. Montgovery, Wm. Ashman, Dr. C. A. Funk, Thos. Ryan, Thos. Bailey, H. Berman and C. A. Sims. A cue will be awarded the winner.

GATUN.

The Gatun-Cristobal basketball game was played on Friday night, October 6, instead of October 7, as scheduled. The line-up's were;

Gatun.		Cristobal.
Wilson	R. F.	Luce
Whiston	L. F.	Sarter
Sherrard, Wright	C.	Weller
Brown, Minotti	L. G.	Swallenberg
Fitzpatrick, Mitchell	R. G.	Sterner

Score—Cristobal, 23, Gatun, 12.

Joseph Mitchell has been elected Captain and Fred Huber , Manager of the basket ball team.

Gold and silver medals will be given as prizes for three-cushion billiard and class A and B pool tournaments now being held. The man making the highest single run in pool will receive a cue.

Gatun lost two games out of three on Saturday, October 7, in a match game of bowling with Empire on the local alleys.

The "Daily News" is the newest feature at the Club House. It consists of a large card board bulletin announcing in brief form the latest and most important foreign and local news items.

CRISTOBAL.

The Literary and Debating Club held an open meeting on Wednesday night, the program being in the form of a political convention. It was interspersed with the singing of patriotic songs by the audience, and songs by a quartette from Corozal. Presidential nominations were made as follows: Insurgent party, Sen. La Follette, by E. D. Nelson; Democratic party, Woodrow Wilson, by C. H. Elliott; Suffragette party, Laura Jean Libby, by C. J. Dinnan; Republican party, W. H. Taft for re-nomination, by C. P. O'Neal. After nomination speeches, a ballot was taken by the audience, resulting as follows: Woodrow Wilson, 57; W. H. Taft, 55; La Follette, 26; Laura Jean Libby,5; Attendance, 214.

The program for the meeting of October 18 will include an address on "The Installation and Operation of Lock Machinery," by Lewis Mason.

The Ten Pin Bowling League games on Saturday night resulted in Cristobal's taking two out of three games from Culebra by the following scores:

Cristobal.				Culebra.			
Barrett.....	201	179	190	Hostetter...	122	144	166
Gibson.....	193	180	146	Mengel.....	187	195	186
Rosteck....	149	142		Fay........	176	176	174
Thomas....			199	Warner....	155	138	150
Furlong....	157	134	200	Case.......	149	203	168
Burns, T...	197	161	183				
Total....	897	796	918		789	836	834

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, October 7, 1911. All heights are in feet above mean sea level.

Day and Date.	Station.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Oct. 1....	128.9	94.9	49.0	15.8	15.6
Mon., Oct. 2...	130.5	95.8	48.9	16.0	15.6
Tues., Oct. 3...	128.9	95.0	49.8	16.2	15.7
Wed., Oct. 4...	127.6	94 5	49.8	16.9	16.1
Thurs., Oct. 5..	126.6	93.2	46.5	16.4	16.0
Fri., Oct. 6....	127.4	93.6	46.5	16.3	16.0
Sat., Oct. 7....	128.2	94.2	46 6	16.3	16.0
Height of low water.......	125.0	92.0	44.0		

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Cristobal, C. Z., on Sunday, October 15, 1911, at 4.30 p. m.

The next concert will be given at Culebra, C. Z., on October 22, at 5.45 p. m.

OFFICIAL CIRCULARS.

Superintendent of Clubhouses.

CULEBRA, C. Z., September 23, 1911.

CIRCULAR No. 412:

Effective this date, Mr. Alfred B. Dickson is appointed Superintendent of Clubhouses, vice Mr. Floyd C. Freeman, resigned.

GEO. W. GOETHALS,
Chairman.

Loss of Locomotive Tools and Oiling Equipment.

CULEBRA, C. Z., September 28, 1911.

CIRCULAR No. 411:

My attention has been invited to the frequent loss of locomotive tools and oiling equipment, resulting, in most cases, from the failure of engineers to see that tools and oil boxes are properly locked before they leave their engines.

Boxes and chains with locks for securing tools, etc., being provided on each locomotive, the loss of such equipment from this cause is inexcusable, and any such loss will, in the future, subject the engineer responsible to discipline.

Locomotive engineers will be expected to see that their engines are provided with a sufficient number of locks and boxes to insure the proper safeguarding of this equipment, and in any case in which locks or boxes have been broken and the equipment removed, they will be expected to report the same promptly to the foreman of the engine house where engine is tied up when not working, who shall, in turn, report the facts to the yardmaster.

Hostlers handling engines at the different points will be required to make personal inspection of all engines immediately upon reporting for duty and to report to the foreman of the engine house any infraction of this order.

In order to assist in the identification of locomotive tools, etc., all such equipment will be numbered by the Mechanical Division with the number of the locomotive to which the same belongs. This numbering will be performed at the different houses upon the delivery of the equipment there by the different divisions concerned.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Hiring of Gold Employes.

CULEBRA, C. Z, October 9, 1911.

CIRCULAR No. 262-F.

Circular No. 262-E is hereby amended by the addition of the following paragraph:

> 13. **Hiring of Gold Employes on Isthmus**—No person will be employed on the Isthmus on the gold roll in any shop without the prior approval of the Inspector of Shops.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Laborers' Clearance and Identification.

CULEBRA, C. Z., September 27, 1911.

CIRCULAR No. 229-U:

Effective October 1, 1911, laborers entering the service on the hourly silver roll will be required to serve at least three months at the rate of pay below that of the gang to which they are assigned, unless such new employes furnish a clearance showing that their previous service was terminated on account of lack of work or reduction of force, this clearance to be attached to an identification certificate (Form X-143) properly made out.

The possession of a contract check will not entitle the holder to any special privileges unless he can satisfactorily prove as above provided or by other evidence that the contract was not forfeited due to the fault or volition of the laborer.

These instructions apply to both European and colored laborers, except when assigned to gangs paid the minimum rate of ten cents per hour.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Rainfall from October 1 to 7, 1911, Inclusive.

Stations.	Maximum in one day.	Date.	Total for period.
Pacific Section	*Ins.*		*Ins.*
Ancon	0.33	3	0.55
Balboa	0.40	5	0.69
*Miraflores	1 04	5	1 42
Pedro Miguel	1.19	5	2.46
Rio Grande	2.34	5	6 70
Central Section—			
Culebra	2.64	1	7.25
*Camacho	2 91	1	8.52
Empire	2.15	1	6.47
Gamboa	1.46	6	4 17
*Juan Mina	1.05	4	2.42
Alhajuela	1.75	3	3.72
*El Vigia	1.50	3	4.64
*Gorgona	0.79	4	2.02
San Pablo	0.47	3	1.28
Tabernilla	0 68	1	1 36
Bohio	1.41	3	3.57
*Monte Lirio	2.09	6	3 44
Atlantic Section—			
Gatun	1.19	1	3.67
*Brazos Brook	0 67	6	1 80
Cristobal	0 49	3	0.70
Porto Bello	2.67	2	†4 97

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., October 6.

September Rainfall for Three Years.

Station.	1909	1910	1911	Station Average	Years of Record	Rai'y days 1911
Pacific Section-						
Ancon	8.77	8.86	6.03	7.39	15	14
Balboa	11.20	9.98	8.66	6.54	13	14
Miraflores	17.53	13.40	8.30	9.90	4	16
Pedro Miguel	17.47	13.42	8.31	8.44	4	19
Rio Grande	18.52	14.72	6.63	10.62	7	20
Central Section-						
Culebra	17.70	13.51	5.97	11.09	23	20
Camacho	20.63	17.20	6.97	10.60	6	20
Empire	21.14	12.57	5.46	7.62	7	21
Gamboa	16.98	12.90	5.20	10.42	29	19
Alhajuela	19.32	15.37	9.29	11.79	13	20
El Vigia	20.93	16.90	7.64	13.45	4	20
Gorgona	18.90	13.33	6.41	12.42	8	17
San Pablo	15.81	16.88	3.82	10.94	5	21
Tabernilla	17.02	14.72	4.47	12.42	5	25
Bohio	16.34	14.53	5.20	13.53	18	24
Trinidad	14.58	16.30	7.03	12.41	4	19
Monte Lirio	13.38	16.46	11.19	12.79	4	27
Atlantic Sec.-						
Gatun	15.55	16.02	4.33	9.97	7	22
Brazos Brook	14.82	12.22	10.32	11.98	6	25
Cristobal	19.31	15.65	11.62	12.54	42	24
Porto Bello	8.70	9.54	17.55	13.32	4	24
Nombre de D.	18.17	5 61	12 29	8 97	3	29

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending October 18, 1911 (75th meridian time):

Date.	Low.	High.	Low.	High.	Low.
	A.M.	A.M.	P.M.	P.M.	P.M.
October 12	12.00	6.05	12 30	6.30	......
October 13	12 47	6 50	1.15	7.20	......
October 14	1.35	7 40	2.10	8.15	......
October 15	2.35	8.35	3 10	9 20	......
October 16	3.50	9 50	4 20	10.40	......
October 17	5.10	11 15	5.40	......	......
October 18	......	12.05	6 25	12.40	6.50

WEATHER CONDITIONS, CANAL ZONE, SEPTEMBER, 1911.

Stations.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.	Date.		Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction	Max. velocity (in miles.)	Direction.	Date.
Cristobal	29.812	80.4	90	12	72	25	86	11 62	12.54	24	6 373	N.	28	N.E	25
Culebra	29.817	79 9	91	27	70	22	92	5.97	11 09	20	[illegible]	N.W.	29	N.E	30
Ancon	29.806	80.8	93	13	68	22	91	6.03	7.39	14	4,712	N.W.	25	N.E.	22

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning October 11, 1911.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24

MISCELLANEOUS.	
Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Veal, per pound	1.20
Beef, per pound	25
Eggs, fresh, dozen	†30
one-half dozen only	†16
Bluefish, fresh, per pound	14
Halibut, fresh, per pound	15
Shads, fresh, each	70
Shad roes, fresh, per pair	35

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.25
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each .60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.00
Broilers, milk fed, each	60
corn fed, each	55
Turkeys, per pound	26
Squabs, each	35
Capons, each	2.10
Fryers, corn fed, each	60
Partridges, each	50
Grouse, each	50

CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	†28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30

DAIRY PRODUCTS.	*Price.*
Butter—Creamery special, per pound	32
Cheese—Roquefort, per pound	38
Philadelphia cream, cake	10
Philadelphia cream, cake	18
Young America, per pound	*20
Swiss, per pound	26
Edam, each	1.00
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**25
Buttermilk, bottle	**15
Fer-mil-lac, bottle	**25
Ice cream, quart	‡25
½-gallon	‡50

VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	6
Cabbage, per pound	4
Cucumbers, per pound	4
Carrots, per pound	3
Cauliflower, per pound	*07
Lettuce, per pound	*12
Onions, per pound	3½
Potatoes, white, per pound	*3
sweet, per pound	2
Pears, alligator, each	6
Parsnips, per pound	4
Romaine, per pound	†15
Turnips, per pound	3
Tomatoes, per pound	†6
Yams, per pound	3
Apples, per pound	*5
Cantaloupes, each	8
Grapes, per pound	8
Grape Fruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, California, per dozen	36
Oranges, per dozen	*12
Peaches, pound	8
Plums, per pound	10
Pears, per pound	*6

---

*Indicates reduction from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
‡Sold only from commissaries; no orders taken for delivery

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon and Balboa during the week ending October 7:

Prinz Aug. Wilhelm, October 2, from New York, with 38 cases picks, 15 cases lanterns, 50 bundles wire, 235 cases blasting caps, for stock; 13 cases machinery, for Atlantic Division.

Acapulco, October 3, from San Francisco, with 13 crates stovepipe elbows, for stock.

Abangarez, October 5, from New Orleans, with 35 pieces piling for Atlantic Division; 10 pieces piling, 5452 pieces yellow pine lumber, 15 rolls cotton duck, 190 bales rice straw, 911 bales hay for stock; 377 pieces white oak lumber, 2,031 pieces yellow pine lumber, for Mechanical Division; 12 crates concrete mixers, for Pacific Division; 6 crates concrete mixers, for Panama Railroad Company.

Santa Marta, October 5, from New York, with 25 coils rope, 25 cases fuse, 32 cases rubber hose, 427 drums kerosene, for stock.

Panama, October 5, from New York, with 18 cases insulated wire, 8 pieces lumber, 120 pieces switches, 45 pieces railroad frogs, 7 cases switch fittings, 136 barrels caustic soda, 24 bales rubber hose, 160 coils rope, 91 kegs galvanized iron spikes, 100 cases varnish, 28 cases picks, 75 cases sal-soda, 10 kegs lump chalk, 40 cases metal polish, 14 cases copper tacks, 53 cases air brake material, 27 cases ink, 9 cases mucilage, 9 cases milk cans, 400 cases washing powder, 25 bundles scythe snaths, 8 drums zinc, 20 cases car seals, for stock; 395 barrels sand, 37 crates fire brick, 93 cases brake shoes, 9 barrels crucibles, 73 packages locomotive cranes, for Mechanical Division; 120 cases bolts, 15 cases copper tubes, 10 cases electrical material, 20 rolls wire cloth, 9 cases filter plant material, for Atlantic Division; 88 cases bolts, 18 bales fog horns, 8 cases pumping machinery, for Pacific Division; 110 packages drugs and sundries, for Sanitary Department; and a miscellaneous cargo, the whole consisting of 2,871 packages, weighing 300 tons.

Lost—Between pier 11, Cristobal, and house 4, Colon Beach, a string of gold beads. Reward if returned to Mrs. J. P. Mead, Colon.

Sale of Horizontal Stationary Gasoline Engine.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, until two o'clock P. M., October 16, 1911, when they will be opened in the presence of attending bidders, for one 2½ horse power "Williamsport Special" horizontal stationary gasoline engine, complete with battery box, cooling tank and driving belt. Engine can be seen and examined on any working day between the hours of seven to eleven A. M., and one to five P. M., upon application to this office. The right is reserved to reject any or all bids. Bids must be plainly marked "Proposal to purchase one stationary gasoline engine, to be opened October 16, 1911," and addressed to the Acting Depot Quartermaster, Mount Hope, C. Z.

CHARLES L. PARKER,
Acting Depot Quartermaster.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line; the Panama Railroad Company's dates being subject to change.

NEW YORK TO CRISTOBAL.

Colon	P. R. R	Thursday	Oct. 12
Allianca	P. R. R	Wednesday	Oct. 18
Panama	P. R. R	Tuesday	Oct. 24
Advance	P. R. R	Monday	Oct. 30

CRISTOBAL TO NEW YORK.

Advance	P. R. R	Tuesday	Oct. 17
Colon	P. R. R	Tuesday	Oct. 24
Allianca	P. R. R	Monday	Oct. 30
Panama	P. R. R	Sunday	Nov. 5
Advance	P. R. R	Saturday	Nov. 11

NEW YORK TO COLON.

Prinz Joachim	H.-A.	Saturday	Oct. 7
Zacapa	U. F. C.	Thursday	Oct. 12
Prinz Eitel Friedrich	H.-A.	Friday	Oct. 13
Atrato	R. M.	Saturday	Oct. 14
Almirante	U. F. C.	Thursday	Oct. 19
Prinz August Wilhelm	H.-A.	Saturday	Oct. 21
Santa Marta	U. F. C.	Thursday	Oct. 26
Prinz Sigismund	H.-A.	Friday	Oct. 27
Thames	R. M.	Saturday	Oct. 28
Metapan	U. F. C.	Thursday	Nov. 2
Prinz Joachim	H.-A	Saturday	Nov. 4
Zacapa	U. F. C.	Thursday	Nov. 9
Prinz Eitel Friedrich	H.-A	Friday	Nov. 10
Trent	R. M.	Saturday	Nov. 11
Almirante	U. F. C.	Thursday	Nov. 16
Prinz August Wilhelm	H.-A.	Saturday	Nov. 18
Santa Marta	U. F. C.	Thursday	Nov. 23
Prinz Sigismund	H.-A.	Friday	Nov. 24
Oruba	R. M	Saturday	Nov. 25
Metapan	U. F. C.	Thursday	Nov. 30
Prinz Joachim	H.-A	Saturday	Dec. 2
Zacapa	U. F. C.	Thursday	Dec. 7
Prinz Eitel Friedrich	H.-A	Friday	Dec 8
Magdalena	R. M	Saturday	Dec. 9
Almirante	U. F. C.	Thursday	Dec. 14
Prinz August Wilhelm	H.-A	Saturday	Dec. 16
Santa Marta	U. F. C.	Thursday	Dec. 21
Prinz Sigismund	H.-A	Friday	Dec. 2

COLON TO NEW YORK.

Santa Marta	U. F. C.	Thursday	Oct. 12
Prinz Sigismund	H.-A.	Saturday	Oct. 14
Thames	R. M.	Tuesday	Oct. 17
Metapan	U. F. C.	Thursday	Oct. 19
Prinz Joachim	H.-A.	Tuesday	Oct. 24
Zacapa	U. F. C.	Thursday	Oct. 26
Prinz Eitel Friedrich	H.-A.	Saturday	Oct. 28
Trent	R. M	Tuesday	Oct. 31
Almirante	U. F. C	Thursday	Nov. 2
Prinz August Wilhelm	H.-A.	Tuesday	Nov, 7
Prinz Sigismund	H.-A.	Saturday	Nov. 11
Oruba	R. M	Tuesday	Nov. 14
Metapan	U. F. C.	Thursday	Nov. 16
Prinz Joachim	H.-A	Tuesday	Nov. 21
Zacapa	U. F. C.	Thursday	Nov. 23
Prinz Eitel Friedrich	H.-A	Saturday	Nov. 25
Magdalena	R. M	Tuesday	Nov. 28
Almirante	U. F. C.	Thursday	Nov. 30
Prinz August Wilhelm	H.-A	Tuesday	Dec. 5
Santa Marta	U. F. C.	Thursday	Dec. 7
Prinz Sigismund	H.-A.	Saturday	Dec. 9
Clyde	R. M	Tuesday	Dec. 12
Metapan	U. F. C.	Thursday	Dec. 14
Prinz Joachim	H.-A	Tuesday	Dec. 19
Zacapa	U. F. C.	Thursday	Dec. 21

NEW ORLEANS TO COLON.

Atenas	U. F. C.	Saturday	Oct. 7
Parismina	U. F. C.	Wednesday	Oct. 11
Turrialba	U. F. C.	Saturday	Oct. 14
Heredia	U. F. C.	Wednesday	Oct. 18
Abangarez	U. F. C.	Saturday	Oct. 21
Cartago	U. F. C.	Wednesday	Oct. 25
Atenas	U. F. C.	Saturday	Oct. 28
Parismina	U. F. C.	Wednesday	Nov, 1
Turrialba	U. F. C.	Saturday	Nov. 4
Heredia	U. F. C.	Wednesday	Nov. 4
Abangarez	U. F. C.	Saturday	Nov. 11
Cartago	U. F. C.	Wednesday	Nov. 15

COLON TO NEW ORLEANS.

Cartago	U. F. C.	Thursday	Oct. 12
Abangarez	U. F. C.	Thursday	Oct. 12
Parismina	U. F. C.	Thursday	Oct. 19
Atenas	U. F. C.	Thursday	Oct. 19
Heredia	U. F. C.	Thursday	Oct. 26
Turrialba	U. F. C.	Thursday	Oct. 26
Cartago	U. F. C.	Thursday	Nov. 2
Abangarez	U. F. C.	Thursday	Nov. 2
Parismina	U. F. C.	Thursday	Nov. 9
Atenas	U. F. C.	Thursday	Nov. 9

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, OCTOBER 18, 1911. No. 8.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of September is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Pedro Miguel Locks.

An effort is being made to complete the back fill on the west side of Pedro Miguel Locks by November 1, in order that it may be used by the lock gate contractor as a storage yard for materials for the lower guard and operating gates. On October 16 there remained to be filled an area that will require about 30,000 cubic yards of material. Spoil from the lock site at Miraflores has been used up to the present time, but this week there will be added to this, seven or eight trains daily of excavation from Culebra Cut, averaging about 380 yards to a train. In all it is expected that about 3.500 cubic yards a day will be dumped between now and the end of the month. In making the climb from the south end of the locks to the level of the top of the walls the trains go up 60 feet in about a quarter of a mile.

The placing of material for the north guard gates is about half completed, this work having been delayed by non-delivery of material from the States. In order to expedite the gate erection. the contractor will build a second construction bridge over the lock chambers, from which materials for the lower guard and operating gates will be lowered into place. Thus, work on all four gates at Pedro Miguel will be in progress at one time.

Concrete laying is so nearly completed that only isolated portions remain to be done. At the north end, the slow and intricate work of placing the three gate valves in each of the side wall intakes and the sluice gate of the center wall intake, is in progress. At the south end, excavation for the outlet on the east side has been completed and concrete laying is in progress. A 70-ton shovel is completing the excavation for the southeast wing wall, and concrete work will be begun in a few days. As soon as it has finished digging at this point, the shovel will be taken to the hill that rises above the lock walls on the east side, and there will excavate for the back fill of the east wall

In the west chamber at the south end, the laying of the floor south of the caisson sill is being expedited. When this is in place the drainage water from Culebra Cut, which flows through the center culvert of Pedro Miguel locks and from the outlet through the approach to the east lock, will be diverted to the west approach, in order that the floor in the east approach may be finished.

Surplus of Common Labor.

The Isthmian Canal Commission wishes to announce that there is on the Isthmus at present a surplus of unemployed labor both European and West Indian. If laborers are desired by any recruiting agents, the agents should notify the Chief Quartermaster, Culebra how many men they can give employment, where they are to go, and what wages will be paid them. The Chief Quartermaster will then send the agent such men as desire to accept the terms offered This will continue in force so long as surplus labor is available.

North Guide Wall at Miraflores Locks.

Work on the north guide wall at Miraflores Locks was begun on September 30, when an experimental caisson was sunk for one of the foundation piers. The plant for sinking the remainder of the 250 caissons is nearing completion, and will be in operation this week.

This wall will be a cellular, reinforced concrete structure extending into Miraflores Lake from the north end of the center wall of the locks, and will serve the double purpose of guiding ships into the locks and of carrying the towing locomotives that will take hold of vessels in the approach. It will be 1,185 feet long, 58 feet wide, and will be composed of two face walls of reinforced concrete from 14 to 23 inches thick, depending on the depth below the top of the wall, with cross walls 18 inches thick on centers of 15 feet. Thus it will be a series of cells about 54 feet across and 18½ feet longitudinally. At the north end the wall will be solid for 31 feet 6 inches.

The rock upon which Miraflores locks are founded dips at the north end of the lock site and at the beginning of the guide wall is about 10 feet below sea level, while at the end it is 48 feet below. In order to avoid excavation and to economize on concrete, the wall will be founded upon concrete piers sunk to rock. The work now in progress is the sinking of of caissons for these piers. The caissons are made of reinforced concrete in steel forms, in six foot sections, and are 5 feet 6 inches at inside diameter and 7 feet 6 inches at outside, the shell being thus one foot thick. They will be sunk in three rows, longitudinally at 15 foot intervals, and laterally on 27 foot centers except under the solid portion where there will be four rows. It is proposed to work on eight at one time, and to this end eight working platforms have been erected on skids, so that they can be moved from one series of caissons to another as the work is completed.

By means of a rope drive a series of eight pulleys, one to each platform, is kept moving constantly. Each pulley is direct connected to a "nigger head," and the operation of lifting a bucket of spoil from the caisson pit is accomplished by a double turn, on the "nigger head," of a rope that passes through a block immediately over the caisson. The spoil will be hauled to the dumps nearby in Decauville cars. When the caissons are down to rock they will be filled with concrete.

Gatun Spillway Program.

During the period from the present to January 1, 1912, work on the spillway of Gatun Dam will be confined to the construction of the machinery tunnel to 69 feet above sea level, the lower portion of the crest piers outside the channel of flow, the lower portion of abutments, flare walls, and approach walls. Work is now in progress on the forming for the machinery tunnel, 8 by 10 feet, which will extend the entire length of the concrete dam. A program for the construction of the spillway dam and works has been prepared as follows:

PERIOD JANUARY 1, 1912 TO APRIL 30, 1912.

Closure of channel of flow to elevation plus 50; and installation of sluice gates with operating machinery on piers at elevation plus 70. Estimated concrete, 25,710 cubic yards, an average of 257 cubic yards per working day.

Every possible perparation will be made before January first for doing this work at the maximum practicable rate. Equipment for placing concrete, handling forms, etc., will consist of three derricks with 70-foot boom so placed as to cover the full channel width; and movable chutes for depositing concrete at any point directly from dump cars. These facilities provide for placing concrete at over four times the required average rate.

During January and part of February, when the river flow is considerable, it is proposed to coffer off not more than two-thirds of the channel, completing the closure and opening the sluiceways not later than February 28, when the discharge has dropped to about the minimum. Arc lights will be installed so that any night work necessary to advance the work may be advantageously prosecuted.

PERIOD APRIL 30, 1912 TO AUGUST 1, 1912.

Sluice gates are to be closed at the beginning of this period and with normal flow, the lake will reach plus 50 at the end thereof. All concrete and bulkhead closures needed to force flood flow over central portion of dam at plus 50, as well as trash racks, pipes, control gates, etc., in hydro-electric plant forebay, will be placed during May. Thereafter, abutments and adjacent walls and crest piers will be carried toward final levels, working from a trestle at elevation plus 93. Estimated concrete, 8,800 cubic yards, an average of 117 cubic yards per working day.

PERIOD AUGUST 1, 1912 TO JANUARY 1, 1913.

Concrete force will be employed principally in the construction of the hydro-electric plant. On the Spillway dam about 2,500 cubic yards will be placed, carrying crest piers outside channel of flow to final heights. This work to be done from trestle at plus 93 on top of ogee. If crest gates and foot bridges are ready, they will be placed during this period on the practically completed flanks of the dam. A study of maximum discharge for various periods indicates that the lake level

NOTES OF PROGRESS.

(Continued.)

will probably not exceed plus 59 under the conditions obtaining.

PERIOD SUBSEQUENT TO JANUARY 1, 1913.

By manipulating the sluiceway gates, the lake will be held at about plus 50, and the machinery tunnel, ogee to plus 69, and lower portion of crest piers will be completed across the channel of flow. Estimated concrete, 10,375 cubic yards to be placed by April 1, average per day 138 cubic yards.

After April 1, the trestle at plus 93, already built along the top of the flanks of the dam, will be joined across the central portion; the remaining crest piers carried to final elevation (5,960 cubic yards), the sluiceways filled (1,231 cubic yards), and gates and machinery of same removed, about April 30; the crest gates and foot bridge placed by wrecking cranes working from the plus 93 trestle; machinery installed in tunnel; and the dam completed. With normal flow, the lake will gradually rise from plus 50 on April 30, to plus 69 on August 1.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 70.5 per cent completed, 158,642 cubic yards, out of a total of 225,000, having been placed at the close of work on October 14. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
October 9	156	7.30	1
October 10	126	7.00	1
October 11	88	4.30	1
October 12	152	7.30	1
October 13	168	8.00	1
October 14	100	5.30	1
Total	800	40.00	1
Previously reported	157,842		
Grand total	158,642		

Porto Bello Crusher.

DATE.	Hours worked.	Cubic Yards.
October 9	4.13	1,351
October 10	4.06	1,649
October 11	4.01	1,333
October 12	3.49	1,607
October 13	3.13	1,677
October 14	2.58	1,437
Total	22.20	9,054

Ancon Crusher.

DATE.	Hours worked.	Cubic Yards.
October 9	5.35	2,162
October 10	6.50	2,376
October 11	8.20	2,897
October 12	8.00	2,613
October 13	8.05	2,969
October 14	7.50	2,614
Total	44.40	15,631

Municipal Improvements in Panama.

Work has been begun on the improvements in the streets of the city of Panama which were requested by the Secretary of Foreign Affairs of the Republic in a letter to the Head of the Department of Civil Administration of the Canal Zone, March 28, 1911. Under the contract of July 1, 1910, such improvements are to be made by the Commission, and when paid for by the Republic of Panama they become the property of Panama.

The streets to be improved at this time are Ancon Boulevard, 1,700 feet long, which runs south from Fourth of July Street, in a direction generally parallel to the Zone Line Road, and intersects the Balboa Road two blocks east of the Protestant cemetery; what is unofficially known as Magoon Street, running from the Zone Line Road at a point just north of the National Institute, to Central Avenue at its intersection with Lyons Street, 1,050 feet; two blocks of West Seventeenth Street, north from the Balboa Road and east of Ancon Boulevard, 690 feet; and an extension of C Street west from Sixteenth Street to Ancon Boulevard, two blocks, 600 feet. In all, 4,040 feet of street along which 8-inch sewer and 6-inch water mains are to be laid, the surface graded and macadamized, and gutters and curbing set. The water main is to connect with the main on Fourth of July Street, while the sewer system will drain to the west, through the Cocoa Grove section, to the Bay of Panama. The cost is estimated at $27,500.

CONCRETE WORK IN THE LOCKS.

Over 68 per cent of the concrete for the locks is in place, the amount at the close of work on October 14, being 2,860,117 cubic yards, out of a total of approximately 4,199,400. A total of 32,882 cubic yards of concrete was laid in the locks during the week ending October 14.

GATUN LOCKS.

Over 82 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on October 14 being 1,647,693 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending October 14, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
October 9	1,708	27.54	6	472	6.50	2	70	2,250
October 10	1,950	33.34	6	240	4.40	2	140	2,360
October 11	1,504	25.24	6	138	3.40	2	100	1,742
October 12	1,494	28.24	6	144	3.03	2	106	1,744
October 13	1,542	24.56	6	276	4.40	2	68	1,886
October 14	1,750	26.58	6	316	6.40	2	92	2,158
*Portable mixers	....	....	......	389	....	......	....	389
Total	9,978	167.10	6	1,978	29.33	2	576	12,529
Previously reported	....	....	......	....	....	......	....	1,635,164
Grand total	....	....	......	....	....	......	....	1,647,693

*The 389 yards shown for the portable mixers are reinforced concrete, and were placed on the following days: October 9th, 72; October 10th, 57½; October 11th, 60½; October 12th, 60½; October 13th, 60; October 14th, 57½.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 88 per cent completed, 741,028 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on October 14. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
October 9	530	16.50	3	426	22.00	3	....	956
October 10	738	18.00	3	166	11.00	3	....	904
October 11	646	19.00	3	207	12.00	3	....	853
October 12	400	10.50	3	299	17.00	3	....	699
October 13	672	18.00	3	381	20.50	3	....	1,053
October 14	714	18.00	3	409	22.50	3	....	1,123
Totals	3,700	100.00	3	1,888	105.00	3	....	5,588
Previously reported	....	....	......	....	....	......	4,411	735,440
Grand total	....	....	......	....	....	......	4,411	741,028

MIRAFLORES LOCKS.

Over 34.6 per cent of the concrete for the system of two twin locks at Miraflores was in place on October 14, the total amount on that date being 471,396 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Oct. 8	....	....	......	282	3.50	1	....	....	......	....	282
Oct. 9	1,502	35.33	6	1,038	18.00	2	303	24.75	4	....	2,843
Oct. 10	1,320	27.17	6	1,122	15.30	2	345	26.75	4	....	2,787
Oct. 11	668	18.50	5	10,22	13.67	2	318	23.00	3	....	2,008
Oct. 12	496	25.17	6	1,130	15.30	2	262	19.00	3	....	1,888
Oct. 13	1,242	35.00	6	1,172	16.90	2	267	20.00	3	....	2,681
Oct. 14	900	25.33	6	1,022	14.40	2	354	24.50	3	....	2,276
Total	6,128	166.50	5.83	6,788	97.07	1.86	1,849	138.00	3.33	....	14,765
Previously reported	....	....	......	....	....	......	....	....	......	3,693	456,631
Grand total	....	....	......	....	....	......	....	....	......	3,693	471,396

EXECUTIVE ORDER.

To Amend Sections 51, 62, and 526, and to Repeal Sections 63 and 529 of the Code of Civil Procedure of the Canal Zone.

By virtue of the authority vested in me, I hereby establish the following Order for the Canal Zone:

ARTICLE I: Section 51 of the Code of Civil Procedure of the Canal Zone is hereby amended to read as follows:

> *Section 51:* Pleadings in the District Courts shall be oral, except when they are required by law to be verified by the oath of either of the parties to the suit, in which case the pleadings shall be in writing.

ARTICLE II: Section 62 of the above mentioned Code is hereby amended so as to read as follows:

> *Section 62:* Every District Judge shall keep a well bound book styled "Docket," in which he shall enter the name and style of every civil suit brought before him; the dates of issuing process therein and of the return thereof; a brief statement of the nature of the suit and of any plea made thereto by the defendant, and if no appearance is made, the defendant's default shall be noted; the names of the witnesses sworn; the date and the amount of the judgment; the date of issuing execution or other process upon the judgment, and a copy of the returns theron; the appeal, when and by whom demanded; and briefly all the proceedings before him touching the suit.
>
> Each District Judge, at the beginning of his docket and before any entries are made therein shall make and subscribe the following certificate, substantially, to-wit:—
>
> "A docket of proceedings in civil matters before ...., District Judge of the Administrative District of ...., Canal Zone.
>
> Witness my signature..................
>
> District Judge"

ARTICLE III: Section 526 of the above mentioned Code is hereby amended so as to read as follows:

> *Section 526:* Costs shall ordinarily be allowed to the prevailing party as a matter of course. but the court shall have power for special reasons to adjudge that either party shall pay the costs of an action or that the same be divided as may be equitable; and the court may, for sufficient cause, order that no costs be taxed against either party to any suit or special proceedings.

ARTICLE IV: Sections 63 and 529 of the Code of Civil Procedure are hereby repealed.

ARTICLE V: This Order shall take effect 90 days from and after this date.

WM. H. TAFT.

THE WHITE HOUSE,
Sept. 26, 1911.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters and engineers, and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on October 25. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m. on October 25, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the autobile with them.

Rodmen and Levelmen.

An examination to test the fitness of rodmen and levelmen for promotion will be held at Culebra on Sunday, October 29. Employes wishing to enter this examination should forward their applications through the head of the department or division in which they are serving to Mr. A. B. Nichols, chairman of the examining board, Culebra.

PERSONAL.

Among the passengers on the *Colon*, which will arrive on October 18, are Mr. H. H. Rousseau, with Mrs. Rousseau and child, and Mr. Henry Goldmark and family.

A party of Senators and Representatives, including Senators Brandegee, of Connecticut, Cummings of Iowa, Wetmore of Rhode Island, Overman of North Carolina. Brown of Nebraska, Bristow of Kansas, Thornton of Louisiana, and Jones of Washington, are among the passengers on the *Ancon*, due to arrive at Cristobal on October 22.

Obituary.

C. B. West, an employe of the Central Division at Empire, died at Colon Hospital on October 11, 1911. He was 44 years of age, married, and had been on the Isthmus for six years, having come here from New York. He is survived by his wife.

John P. Thayer, whose last residence in the States was at Ardmore, Okla., died in Santo Tomas Hospital, Panama, on October 11, of Bright's disease. He entered the employ of the Commission on December 15, 1905, resigning on January 30, 1911 to become Assistant Chief Engineer of the Republic of Panama. He was 50 years of age, and is survived by his wife and two children.

United Fruit Company's New Ships.

Three new ships, the *Carrillo*, *Tivives* and *Sixola*, are nearing completion at Belfast for the United Fruit Company. The *Carrillo* is scheduled to arrive at Colon on Thursday, October 25, after making a stop at Kingston. The *Tivives* is scheduled to arrive at Colon on either Wednesday, November 8, or Thursday, November 9, after making a stop at Kingston. The *Sixola* is scheduled to arrive at Kingston on Saturday, November 11, from where it will be dispatched to New Orleans direct at the earliest possible date.

The sailing from New Orleans of the *Parismina* on October 18, and that of the *Heredia* on November 1, will be cancelled and their places taken by the *Carrillo* and *Tivives* respectively.

United Spanish War Veterans.

At a meeting of Chagres Camp No. 2, U. S. W. V., at Culebra on October 8, a resolution of sympathy addressed to Mrs. Winfield Scott Schley was adopted on account of the death of Rear Admiral Schley, who was a comrade of Harden Camp of Washington.

The dedication and blessing of the Catholic chapel at Gatun took place on Sunday, October 2, by the pastor, the Rev. M. A. Jiamona. Mass was sung by the Misses Butler of Cristobal. The chapel was decorated by the ladies of the Altar Society. The Rev. Jiamona leaves for a five months visit to Rome on October 17, and during his absence mass will be celebrated by the Rev. José de Ruggero of Panama.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The schedule of moving picture entertainments for the week October 23 to 28, follows: Monday, Gatun; Tuesday, Cristobal; Wednesday, Gorgona; Thursday, Corozal; Friday, Empire; Saturday, Culebra.

The standing of the Isthmian Basket Ball League on October 14, follows:

Team.	Won.	Lost.	P. C.
Cristobal..........	2	0	1.000
Culebra...........	1	0	1.000
Gatun.............	2	2	.500
Gorgona...........	2	2	.500
Empire............	0	2	.000
Corozal...........	0	1	.000

The standing of the teams in the Isthmian Bowling League on October 14, follows:

Team.	Played.	Won.	Lost.	P. C.
Empire.....	42	32	10	.761
Cristobal....	42	24	18	.571
Gatun......	42	24	18	.571
Gorgona.....	42	22	20	.523
Marines.....	36	13	17	.433
Culebra.....	36	9	27	.250

CULEBRA.

The bowling game between the Marines and Culebra, which was to have been rolled Saturday night, has been postponed until Thursday night, October 19.

The high scores rolled during the week are as follows: Ten Pins—Dougherty 220; Case 200; Mitchell 200; Mengel 207, 211. Duckpins—Hobart 107, 102.

COROZAL.

On Saturday night October 21, the basket ball team will play the Gatun team at Gatun

A general course in "Studies in Social Reform and What to Do" will be started at the Clubhouse on Wednesday night, October 25. At the first meeting, the subject of accidents will be taken up for discussion. All men are invited to attend the class and take part in the discussions.

EMPIRE.

In the league games bowled on Saturday October 14, on the Empire alleys. Empire took two out of three games. The scores were as follows.:

Empire: 790. 802, 957. Cristobal: 746, 872, 930.

On Saturday, October 21, Camp Elliott will bowl on Empire alleys in the league series.

The basket ball game between Empire and Cristobal played on Empire court October 14, resulted in Cristobal winning by a score of 20 to 14. On Saturday, October 21, the Gorgona team will play at Empire.

GORGONA.

On Saturday night the Gorgona bowling team took two out of three games from Gatun on the local floor. In the last frame of the last game Gatun was ahead, each team having taken one of the preceding games, when Haggerty made a strike out, putting Gorgona ahead by two points. The scores were as follows:

Gorgona: 773, 781. 786. Gatun: 662, 799, 784.

In basket ball, Gatun defeated Gorgona on the local floor last Saturday night, by a score of 22 to 11

Next Saturday evening the local team will play at Empire.

John C. Kendall has presented the clubhouse with three hand-made orchid baskets, filled with many varieties of orchids gathered from the jungle.

GATUN.

Gatun took all three games of bowling with Gorgona at Gatun on Saturday, October 14.

Mr. R. L. Dwelle, formerly of the Greenpoint Branch Y. M. C. A., Brooklyn, has arrived on the Isthmus and taken up his duties as Physical Director of the Gatun Y. M. C. A. The gymnasium classes will continue to meet Tuesdays and Fridays with basketball practice on Monday and Thursday evenings.

On Monday afternoon the Boy's Department will be reorganized and placed under the direction of Mr. Dwelle. The boys will have regular gymnasium classes various teams well be formed, hikes and trips taken and an atheletic meet will be held. There are twenty one boys in the junior Department.

CRISTOBAL.

The address by L. A. Mason, of Culebra, on the Installation and Operation of Lock Machinery, scheduled for October 18, has been postponed to Wednesday, October 25.

A Bible study club has been organized and will hold its first session on Monday, October 22, and there will be meetings for twelve consecutive weeks.

The Culebra basket ball team will play the Cristobal team on the local floor on Saturday, October 21.

The Gatun bowling team will bowl the local team at Cristobal on Saturday, October 21.

The Empire bowling team took three games from Cristobal on Saturday evening, October 14. by the following scores:

Empire: 875, 843, 819. Cristobal: 863, 814, 784.

CANAL WORK IN SEPTEMBER.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., October 12, 1911.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of September, 1911.

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	77,976	1,351,445	136,681	1,566,102
Work excavation, wet	Cubic yards	420,434	10,000	534,667	965,101
Total work excavation	Cubic yards	498,410	1,361,445	678,909	2,538,764
Plant excavation, dry	Cubic yards	....	....	....	....
Plant excavation, wet	Cubic yards	....	....	7,561	7,561
Total plant excavation	Cubic yards	....	....	....	....
Total Canal excavation	Cubic yards	498,410	1,361,445	678,909	2,538,764
Material placed in dams	Cubic yards	456,335	....	44,941	501,276
Concrete placed in locks and dams	Cubic yards	60,948	....	71,462	132,410
Explosives used	Tons (Gross)	53.93	220.04	39.51	313.48
Rock drilled	Feet	38,860	387,972	101.666	528,498
Tracks removed	Miles	....	11.80	....	11.82
New tracks laid	Miles	1.91	20.91	4.66	27.48
Rock crushed	Cubic yards	44,352	....	58,290	102,642
Cement used	Barrels	64,825	190	74,219	139,234
New roads built	Miles	0.35	....	....	0.35
Water mains laid	Feet	1,078	350	1,762	3,190
Sewers laid	Feet	1,079	....	....	1,079
Open drains and ditches dug	Feet	19,695	275	10,695	30,655
Average daily force	....	7.257	8,609	5,327	21,193
Average rainfall	Inches	7.97	5.41	8.48	6.35

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision, as stated in reports for previous months, is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the Division Engineers, under supervision of this office. The field work consisted of setting of Stoney valve fixed irons in the masonry; measurements of emergency dam sills at Gatun; experiments of flow of water through orifices, and final hydraulic test of Stoney valves at Gatun.

LOCK GATES AND PROTECTIVE DEVICES.

Up to September 20, a total of 33,330 tons of material had been accepted at the mills, about 1,600 tons having been accepted at the mills during the month; and a total of 20,765 tons, or about 40 per cent of the total contract, had been shipped to the Isthmus.

All of the material required for the 54′ 8″ upper guard gates, for the 77′ upper and middle gates, and 97 per cent of the material required for the 77′ safety and lower gates at Gatun; and all of the material required for the 54′ 8″ upper gates, 92 per cent of the material for the 79′ upper and middle gates, and 22 per cent of the material required for the 79′ safety and lower gates at Pedro Miguel, has been accepted and shipped.

At Gatun, all structural material required in the construction of leaves 37 and 38, upper guard gates, east lock, with the exception of the footwalks, fender angles, manhole covers, etc., has been erected in place. The interior riveting of these leaves is practically completed, and of the exterior riveting, about 40 per cent has been done. All structural material required in the construction of leaves 39 and 40, upper guard gates, west lock, with the exception of the sheathing plates, footwalks, fender angles, manhole covers, etc., has been erected in place. Practically all interior riveting, but only about 5 per cent of the exterior riveting, has been done.

At Pedro Miguel, about 41 per cent of the structural material for leaves 50, 51, 52, and 53, upper guard gates, east and west lock, has been erected, of which 20 per cent has been riveted in place.

Satisfactory progress has been made on the erection and adjustment, as well as in the babbitting, of the nickel steel bearing plates in the hollow quoins at both Gatun and Pedro Miguel. Owing to discrepancies in alignment of bearing plates in quoin for leaf No. 36, Gatun, the acceptance of this quoin has been withheld since June, pending satisfactory disposition of same by the contractor.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection as follows:

(1) For the Stoney and cylindrical valve machines, purchased under Circular 614: Preparations have been made for test of the first Stoney gate valve machine which has been erected in the shops of the contractor, and tests were to have been started about the middle of the month. Complete tests have been made on one cylindrical valve machine. This machine was first assembled at the works of contractor with driving motors of different manufacturers. Later the machine was tested under various loads, and, but for a few minor details, the tests show the machines to be satisfactory.

(2) For the rack railway and other material purchased under Circular 619: A large quantity of conductor rail material for section 8, the lower portion of Pedro Miguel approach and wing walls, was shipped from the works of the contractor. Satisfactory progress is reported on the various castings and malleable iron cover plates; also on bolts, nuts and small parts, and on the bumping posts. The contractors have been having considerable difficulty in producing castings for the rack which are free from shrinkage cracks and washouts.

(3) For the gate operating machines, Class 1, and miter forcing machines, Class 2, purchased under Circular 627: Satisfactory progress is reported upon the sample machines.

(4) For the gate and girder hoisting machinery for the emergency dams: Testing rig has been completed and erected for testing out the worm gearing of the hoisting machines purchased under Circular 616.

Considerable material under the above contracts has been received on the Isthmus and inspected and checked upon its arrival.

A force has been organized for the erection of the machinery and the installation of the electrical apparatus on the Isthmus, and work preliminary to placing the first machines was commenced during the month.

EMERGENCY DAMS.

The inspection in the United States under this subdivision progressed satisfactorily during the month. Up to the 20th of the month, a total of 213 drawings for the turning and wedging machinery had been approved. At the works of the contractors about 225 tons of nickel steel and about 43 tons of carbon steel were rolled during the month. Satisfactory progress has also been made in the manufacture of roller bearings for the gates of the emergency dams.

AIDS TO NAVIGATION.

During the month 80½ acres of land were cleared in the vicinity of Pena Blanca for sites for beacons and reference buoys, at an average cost of $9.82 per acre; 42,200 lineal feet of trochas were cut; and the necessary land for making surveys was cleared and profile taken. The places for sixteen gas buoys were located and referenced at Mamei, Juan Grande and Santa Cruz, and between Pena Blanca and Trinidad P. I.

Work on the construction of Range No. 9-11, Pacific Division, was begun on September 5, and at the close of the month the caisson foundation for Light No. 9 was completed to a height of 8 ft., and the forms were placed in position to pour the concrete for the walls. The foundation pier for Light No. 11 was completed to its required height, and the erection of the steel forms for the tower was under way. Preliminary work was undertaken for constructing the foundations of the front light of Range No. 13-14, Pacific Division.

CONTRACTS, IN FORCE AND UNDER ADVERTISEMENT.

Circular 513—Anchorages for lock gates; United Engineering & Foundry Co., contractors. All material under this contract has been shipped to the Isthmus, but approximately $5,000 of final payment is withheld to cover defective nickel steel bearing plates and stud bolts.

Circular 576—Lock gates for all locks; McClintic-Marshall Construction Company, contractors. Forty per cent of the material has been shipped.

Circular 594—Class 1. Fixed irons for Stoney valves; Wheeling Mold and Foundry Company, contractors; contract 90 per cent completed.

Circular 614—Class 1, Item 1: Two stoney gate valve machines, except motors; Wheeling Mold and Foundry Company, Contractors. Contract practically completed. Item 2; 114 Stoney gate valve machines, except motors; contract to be awarded after test of machines under Item 1.

Class 2, Item 1—Two cylindrical valve machines, except motors; Wheeling Mold and Foundry Company, contractors. Contract practically completed. Item 2. 118 cylindrical valve machines, except motors; contract to be awarded after test of machines under Item 1.

Class 3, Item 1—2 motors for Stoney gate valve machines; sample motors purchased from General Electric Co., Westinghouse Electric & Manufacturing Company, and Allis-Chalmers Co. Contract 100 per cent completed. Item 2—114 motors for Stoney gate valve machines; to be awarded after test under Item 1.

Class 4, Item 1—2 motors for cylindrical valve machines; sample motors purchased from above three manufacturers; 100 per cent completed. Item 2—118 motors for cylindrical valve machines; contract to be awarded after test of motors under Item 1.

Class 5, Items 1 and 3—2 limit switches purchased from General Electric Co., Westinghouse Electric and Manufacturing Co., and Cutler-Hammer Mfg. Co.; 100 per cent completed. Items 2 and 4—Limit switches for 114 Stoney gate and 118 cylindrical valve machines, respectively, to be awarded after test of limit switches under Items 1 and 3.

Circular 616—Six emergency dams; contract awarded to United States Steel Products Company; to complete delivery by June 15, 1913.

Circular 619—Rack railway material for all locks. Class 1, structural material; contractor U. S. Steel Products Company. Class 2, steel rack castings; R. C. Hoffman & Co., contractors. Class 3, cast iron and malleable iron castings; Ross-Meehan Foundry Co., contors. Class 4, copper and brass; U. S. Steel Products Co., and St. Louis Screw Company, contractors. Items 15 and 16, held in abeyance. Class 7, miscellaneous (steel bolts, etc.) Oliver Iron & Steel Co., contractors.

Circular 620—Lock gate recess covers; U. S. Steel Products Co., contractors. It is understood that four sets of covers have been shipped out of total of 80 required. Balance of this material will be ready for shipment within the next few weeks.

Circular 627, Class 1, Item 1.—2 miter gate moving machines except motors, Wheeling Mold and Foundry Co.. contractors. Item 2. —90 miter gate moving machines, except motors; award not yet made. Class 2, Item 1.—1 miter forcing machine, except motor; Richard Manufacturing Co., contractors. Item 2.—45 miter forcing machines, except motors; award not yet made. Class 3, Item 1.—2 motors for miter gate moving machines; award held in abeyance. Item 2.—90 motors for miter gate moving machines; contract not yet awarded. Class 4, Item 1.—motor for miter forcing machine; General Electric Company, contractors. Item 2.—45 Motors for miter forcing machines; award not yet made.

Circular 636, Class 1.—Spillway gates, etc.: McClintic-Marshall Construction Company, contractors. Class 2—Rising stem gate valves, etc.; McClintic-Marshall Construction Co., contractors. Class 3—Fixed irons for spillway gates; Excelsior Tool & Machine Co., contractors. Class 4—Roller trains and sealing devices; Westinghouse Machine Co., contractors. Class 5—Railings for spillways; Vulcan Rail & Construction Co.. contractors. No deliveries have yet been made.

Circular 636-D—Brass nuts, bolts and set screws. (Refer to Item 18 of Circular 619).

Circular 639—Structural steel for decking; United States Steel Products Co., contractors. No deliveries have yet been made.

Circular 647—Copper conductor bars and splice bars. Circular published August 24, bids opened September 23; award not yet made.

Circular 648—Plant and material for hydroelectric station. Circular published September 9; bids to be opened on October 24.

Circular 649—Fender chains; bids will be opened November 14.

Circular 650—Towing locomotives. Circular issued September 21; bids to be opened November 20.

Specifications have been forwarded to the General Purchasing Officer covering snubbing posts and washers, bolts and chains, and springs for fenders, but the material has not yet been advertised.

Atlantic Division.

GATUN LOCKS.

Excavation—Shovel excavation in the locks was completed. The total amount of material removed amounted to 5,920,085 cubic yards, of which 5,038,222 cubic yards were removed from the prism.

Backfill—Backfilling behind the side walls of the upper, middle and lower locks, and in the center wall of the uper lock, was continued. The quantity placed during September aggregated 114,229 cubic yards, increasing the total to 798,726 cubic yards. On September 30, the backfilling was 49.64 per cent completed.

Receiving and Issuing Material—The consumption of rock exceeded the receipts by 8,065 cubic yards and the consumption of cement exceeded the receipts by 12,494 barrels. The receipts of sand exceeded the consumption by 4,370 cubic yards.

Mixing and Placing Plant—Both plants, and all portable mixers, were kept in satisfactory operation during the month.

Power Plant and Pumps—The operation of the power plant and pumps was satisfactory.

Iron and Steel Work—During the month, 316.7 tons of fixed steel and 205,316 feet of reinforcing rods were placed; 61.1 tons of reinforcing rails and 440 feet of electric return track were laid.

Concrete Work—There was a decrease of 9,630 cubic yards in the amount of concrete laid as compared with the figures for the preceding month. The daily average for the 25 working days was 2,292 cubic yards, as compared with a daily average during August of 2,478 cubic yards. The total amount of concrete placed during the month was 57,298 cubic yards, including 1,634 cubic yards of large stone. Of the total concrete, 2,269.5 cubic yards were placed in the upper lock, 14,913.5 cubic yards in the middle lock and 40,115 cubic yards in the lower lock The concrete work for the entire lock system was 81 per cent completed at the end of September.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)..	11.29	8.50
Average number of hours per day worked, per strand of cableway laying concrete and large stone (actual working time)	6.40	....
Average number of mixers per day	5.00	2.00
Average hourly output per mixer (actual working time), cu. yds.	63.61	49.00
Average amount of concrete and large stone laid per hour, per strand of cableway (actual working time) cu. yds.	31.82	....
Large stone laid, cu. yds	1,634	....
Concrete laid, cableways, cu.yds.	40,770	....
Concrete laid, through chute into dump cars, cu. yds.	5,328	....
Concrete laid, derricks, cu. yds..	....	2,966
Concrete laid, dump cars, cu. yds	....	5,366
Concrete laid, portable mixers..	....	1,751.5
Total amount of concrete and large stone laid, cu. yds..	47,732	10,083.5

GATUN DAM.

Construction during the month increased the total fill, as determined by cross sections of the material in place, by 456,335 cubic yards, making the total amount in place 15,768,127 cubic yards.

Hydraulic Fill—The dredges increased the hydraulic fill by 261,838 cubic yards. The total hydraulic fill in place September 30, was 8,256,166 cubic yards.

Dry Fill—The material received from the Central Division, Mindi, and from steam shovels Nos. 116 and 134, amounting to 194,497 cubic yards, was placed on the north and south toes of the dam, east and west of the spillway, making the total dry fill in place 7,509,961 cubic yards.

GATUN SPILLWAY.

Excavation—In preparing foundations for the spillway dam, 359 cubic yards of rock and 217 cubic yards of earth were removed by hand. On September 30, the total spillway excavation amounted to 1,586,184 cubic yards.

Concrete—The work of placing concrete was continued. The amount placed during the month aggregated 3,650 cubic yards, which increased the total to 159,381 cubic yards. The concrete work for the spillway was 70.4 per cent completed.

Hydro-electric Plant—Excavation work for site of the power house was continued, a total of 1,210 cubic yards of earth being removed. The total excavation for this purpose at the close of the month was 21,835 cubic yards.

HARBOR AND CHANNEL SECTION.

Excavation below sea level at Mindi—During the month two steam shovels removed 17,609 cubic yards of earth and 56,878 cubic yards of rock from the canal prism

Dredging from the Ocean to Mindi—Five dredges removed 380,894 cubic yards of earth and 39,540 cubic yards of rock from the canal prism. In addition. the dredge *Caribbean* removed 39,867 cubic yards of earth from in front of dock No. 11 and the approach channel. On September 30th 40 feet of water could be carried from Zero to Zero plus 2,100 feet; 35 feet to Mile 3 plus 2,800 feet; 30 feet to Mile 4 plus 3,750 feet; 20 feet to Mile 5 plus 2,438.9 feet, at the junction with the French Canal.

PORTO BELLO.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working days—hours	8.00
Average number of hours worked per day..	4.31
Average number of cubic yards per hour of working day	221.76
Average number of cubic yards per working hour	411.94
Maximum day's output, (5 hours 23 minutes) cu. yds.	2,186.00
Average day's output (25 days) cu. yds.	1,774.08
Average hourly output, (179 hours 59 minutes) cu. yds.	246.42
Total output for the month, cu. yds.	44,352.00

SAND, STONE, AND CEMENT SERVICE.

In connection with this service, plant steamed 6,295 miles, handled 793 barges and carried 3,120 passengers.

WEST BREAKWATER, COLON.

Thirty-four thousand four hundred and ninety-four cubic yards of rock were excavated, of which amount 33,813 cubic yards were placed in the breakwater and 681 cubic yards in track fill. The double track trestle was extended 513 linear feet. On September 30, the trestle extended 7,132 linear feet from shore. The total amount of rock dredged and dumped on the west breakwater to September 1, 1911, was 687,177 cubic yards. During the month 39,540 cubic yards of rock were dredged and dumped, increasing the total to 726,717 cubic yards. The amount of dry fill placed to October 1, was 488,984 cubic yards.

NOMBRE DE DIOS.

During the month 69 barges, containing 33,415 cubic yards of sand, were shipped to Gatun.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Central Division.

During the month of September the total amount of material excavated in the Central Division was 1,361,445 cubic yards, of which 274,914 cubic yards were classified as earth and 1,086,531 cubic yards as rock. Of this quantity, 1,339,437 cubic yards were removed by steam shovels, 736 cubic yards by bucket crane, and contractors removed 10.000 cubic yards by sluicing and 11 ,272 cubic yards by hand. The total, 1,361,445 cubic yards, consisted of primary excavation for the canal prism.

The daily average number of steam shovels at work during the month was 42.00, and the total number of shovel days was 1,050. as compared with 40.66 at work during the month of August with 1,098 shovel days.

For comparison with the work done by steam shovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work	Wkg days.	Av. yards per shovel day.
		Rock.	Earth			
1910:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
Sept. . .	1,572,064	1,114,765	457,299	46.92	25	1,340.20
1911:						
Sept. . .	1,339,437	1,075,211	264,226	42.00	25	1,275.65

Rainfall at Empire: 1910, 8.99 ins.; 1911, 5.46 ins.

The above table shows the average output per shovel to be 4.82 per cent greater in September, 1910, than in the corresponding month of the present year.

The total amount of material excavated from the prism in the Culebra section of the Central Division in September, 1911, or 1,340,173 cubic yards, was the greatest record in that section for the month of September, the previous high record having been in September, 1910, when 1,339,948 cubic yards were removed.

The total estimated amount of material to be removed in the Central Division, according to revised estimate of July 1, 1911, was 101,801,296 cubic yards, and up to October 1, 1911, 81,524,091 cubic yards had been removed, leaving 20,277,205 cubic yards to be removed in order to complete all excavation in the Central Division. From these figures it will be seen that 80.08 per cent of all excavation in the Central Division had been accomplished up to the close of the month of September, 1911, and 19.92 per cent remained uncompleted.

Considering the two sections which compose the Central Division, the excavation completed and that to be completed at the close of September operations was as follows:

CULEBRA SECTION.	*Cu. Yds.*
Completed	69,635,273
To be completed	19,808,732
CHAGRES SECTION.	*Cu. Yds.*
Completed	11,888,818
To be completed	468,473

From the above figures it will be seen that the Culebra Section, locally known as "Culebra Cut," is 77.85 per cent completed with 22.15 per cent to be completed, the Chagres Section is 96.21 per cent completed with 3.79 per cent to be completed.

During the month 33,117 cubic yards of material were dumped in the embankment for the new roadbed for the relocation of the Panama railroad. The total amount of spoil from the Central Division used for this purpose at the close of the month was 3,954,428 cubic yards. The Central Division also delivered at Gatun 227,304 cubic yards of rock and earth for use in the construction of the dam, making the total for this purpose at the end of September, 4,456,271 cubic yards.

The daily average number of laborers at work on the whole Division during the month was 7,826, and the daily average number of gold employes was 783.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

Excavation—The total excavation during the month amounted to 136,681 cubic yards.

Filling and Embankment—During September, 4,052 cubic yards of dry filling were added to the prism of the west dam at Pedro Miguel, increasing the total amount of material in place at the close of the month to 304,981 cubic yards. The backfill at Pedro Miguel was increased by 29,382 cubic yards, the total in place at the end of the month amounting to 349,500 cubic yards.

At Miraflores, 34,480 cubic yards were added to the dry fill in the toes and 6,409 cubic yards to the hydraulic fill in the core of the west dam, making the totals at the end of the month 977,597 cubic yards and 639,098 cubic yards, respectively, The backfill was increased by 22,480 cubic yards, the total aggregating 203,538 cubic yards at the end of the month.

Pedro Miguel Locks—The general backfilling behind the west wall was continued, as was also the filling in of the middle wall with screenings and sand by means of chamber cranes. The fourth arch at the south end of lock walls was poured during the month. The amount of iron placed in the masonry aggregated 173,132 pounds.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT PEDRO MIGUEL.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	2.57	3.87
Average number of mixers per day	....	4.20
	Cu. Yds.	*Cu. Yds.*
Average hourly output per mixer (actual working time)	....	31.20
Average amount of concrete and large stone laid per hour, per chamber crane (actual working time)	33.86	....
Large stone laid	....	....
Concrete laid	2,176.00	13 203.00
Total concrete laid	2,176.00	13,203.00

Permanent plant consisted of two chamber cranes, working intermittently.

Auxiliary plant consisted of three 2-cubic yard mixers, and a daily average of 2 76; three ½-cubic yard mixers, daily average 1.64; and five locomotive cranes or derricks, daily average 4.32 units. ½-cubic yard mixers discharged directly into forms.

Concrete Work—The total amount of concrete and large stone laid at Pedro Miguel was 15,379 cubic yards as compared with 20,736 cubic yards during August. The concrete was placed as follows: 1,220 cubic yards in the floors; 109 cubic yards in the southwest wing wall; 293 cubic yards in the northwest wing wall; 3,314 cubic yards in the east wall; 4,182 cubic yards in the west wall; and 6,261 cubic yards in the center wa ll.

Miraflores Locks—The McClintic-Marshall Construction Company advanced the erection of berm crane "E" sufficiently to permit the installation of electrical equipment. Dry excavation was continued in the lower lock, eight steam shovels being employed. The backfilling of the east and west walls and the filling on the east and west toes of the west dam were continued. Work on concrete caisson shells for foundation piers of the upper guide wall was continued. During the month, the amount of iron placed in the masonry aggregated 478,355 pounds.

Concrete Work—The total amount of concrete and large stone laid was 56,083 cubic yards as compared with 57 003 cubic yards during the month of August. The concrete was placed as follows: 4,037 cubic yards in the east wall; 19,238 cubic yards in the west wall; 29,315 cubic yards in the center wall and 3,493 cubic yards in the floors.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	6.30	7.22
Average number of mixers per day	5.32	4.84
	Cu. Yds.	*Cu Yds.*
Average hourly output per mixer (actual working time)	41.05	38.07
Average amount of concrete and large stone laid per hour, per berm, or chamber crane (actual working time)	69.90	....
Large stone laid	....	....
Concrete laid	52,903 00	3,180.00
Total concrete laid	52,903.00	3,180 00

Permanent plant consisted of three berm and two chamber cranes.

Auxiliary plant consisted of two 2-cubic yard mixers daily, and four ½-cubic yard mixers, daily average 2.85. ½-yard mixers discharged directly into forms.

DISTRICT NO. 2—DREDGING.

The following is a statement of the output of the five dredges which were in operation during the month, and of the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.		PLANT.		Total.	Remarks.
		Earth.	Rock.	Earth	Rock.		
		Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	
Cardenas	Dipper	7 883	10,965	6,800	6,800	32 448	Place measurement
Marmot	Ladder	79,538	3,872	7,561	....	90 971	Place measurement
Badger	Ladder	90,315	....	....	....	90 315	Place measurement
Mole	Ladder	5,700	6,350	....	....	12,050	Scow measurement
Culebra	Suction	259,755	....	....	....	259,755	Scow measurement
Total	....	443,191	21,187	14 361	6,800	485 539	
Hydraulic excavation	....	*70 289	....	....	....	70 289	Place measurement
Grand Total	......	613 480	21,187	14 361	6,800	555 828	

*Excavated from Canal prism, south of Miraflores lock site.

Chamé Sand Excavation—Approximately 40,118 cubic yards of sand were excavated at Punta Chamé and delivered at Balboa.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

	Hours.
Length of working day (hours)	8.00
Average number of hours per day (actual working time)	7.17
Average number of cubic yards crushed per hour of working day	266.47
Average number of cubic yards crushed per working hour	324.37
Total output for the month, cubic yards	58,290.00

Relocation of Panama Railroad.

During the month 353 210 cubic yards of material were excavated, increasing the total excavation at the close of the month to 8,578,228 cubic yards, and 388,130 cubic yards of material were placed in embankment, increasing the total for this purpose to 14,387,082 cubic yards.

The average daily number of steam shovels at work was 9.44 and the total number of working days was 25.

For comparison with the work done by steam shovels during the preceding month, and during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'kg days.	Av. yards per shovel day.
		Rock.	Earth.			
1910:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
Sept. . .	194,371	111,490	82,881	5.62	25	1,383
1911:						
Aug. . . .	359 363	242,331	117.032	9.41	27	1,415
Sept. . . .	343,770	186,155	157,615	9.44	25	1,457

No temporary trestle was driven during the month. Work on bridges and culverts was continued. No permanent track was laid during the month, the amount of 70-pound and 90-pound track remaining at 134,698 linear feet and 42,043 linear feet respectively, as previously reported. The force averaged 2,172 men, in addition to those employed by contractors.

Quartermaster's Department.

LABOR.

Two hundred and thirty-nine laborers were received during the month, distributed as follows: Central Division, 199; Pacific Division, 40. This practically completed the order for one thousand men, placed with the Recruiting Agent in Barbados in June, and instructions were given to discontinue further shipments.

QUARTERS.

The number of West Indians occupying Commission quarters was increased by 600 during the month, making 1,300 additional men quartered since August 1, 1911.

Accommodations for 250 laborers were prepared at Naos Island. Over 100 laborers are quartered at that point.

The settlement at Bohio has been abandoned and the District Quartermaster instructed to transfer the four American families now at that place to other points.

BUILDINGS.

Work on the Tenth Infantry camp at Las Cascadas and White House was completed at the end of the month. The regiment failed to arrive in September, as originally scheduled. Besides the original work contemplated one additional range closet was erected and a temporary corral put up for the public animals attached to this organization.

MATERIAL AND SUPPLIES.

The value of material received from the United States during the month was $581,348.64. Supplies were delivered by 28 steamers. The total weight of cargo aggregated 29,006 tons, exclusive of 787,634 feet B. M. Douglas fir lumber, 894,853 feet B. M. yellow pine lumber, 70,214 feet B. M. white oak lumber, 165 pieces of piling and 38,440 cross ties. There has been an unusual demand for all classes of lumber and piling during the past three months, due to dock work at Colon and trestle work in the Atlantic and Central Divisions.

Subsistence Department.

The operation of the European laborers' messes, the colored laborers' kitchens and the line hotels showed a net profit of $4,198.78 There was a net profit on hotels, penitentiary, tugs and dredges of $89.72. The operation of the Hotel Tivoli showed a net loss of $1,582.19, which was due to an equipment charge amounting to $2,461.13. September was the first month since November, 1910, that the Tivoli Hotel showed a loss. The net profit on subsistence operations was $2,706.31.

Department of Civil Administration.

COURTS.

During the month 19 civil and 33 criminal cases were disposed of in the Supreme and Circuit Courts, and 69 civil and 585 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS AND REVENUES.

Money order sales for September amounted to $451,199.57, and the fees to $2,038.28. Receipts from stamp and card sales, and newspaper postage aggregated $7,341.23. The total collection of revenues made by the division was $24,690.48, and the collection on account of court fines, costs and fees $2,459 03.

Twenty-six vessels entered at and 25 vessels cleared from the port of Ancon; and 20 vessels entered at and 21 vessels cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 592, of whom 547 were men and 45 women, representing an increase of 44 as compared with the month of August, 31 over July, and 92 compared with the month of September a year ago. Twenty-two nations, or 49 separate states and dependencies, were represented. Seven convicts were committed to the penitentiary, and 16 were discharged, leaving 133 convicts in confinement at the close of the month. The cost of guarding and subsisting the convicts was $2,678.42, and the value of their work on Canal Zone roads $1,815.30.

DIVISION OF FIRE PROTECTION.

Twelve fires were reported in the Canal Zone during the month, as compared with eight in August. The damage to Commission property was $24.50.

DIVISION OF PUBLIC WORKS.

In the city of Panama the average daily consumption of water was 1,316,359 gallons, and in Colon, 957,305 gallons.

The usual inspection and maintenance work of this division was performed during the month.

Department of Sanitation.

The total number of deaths from all causes among employees was 57. These were divided as follows: From disease, 42, and from violence, 15, giving the annual average per thousand of 10.63 and 3.80 respectively.

The annual average death rate per thousand among employees for the month of September in previous years since American occupation was as follows:

1904	14.31
1905	32.00
1906	57.34
1907	28 63
1908	12.78
1909	12.76
1910	11.47

The annual average death rate per thousand in the cities of Panama, Colon and the Canal Zone, including both employees and non-employees, was 21.56.

The annual average death rate per thousand for the month of September among the same class of population for previous years was as follows:

1905	52.31
1906	54 54
1907	32.93
1908	24.91
1909	19.01
1910	21.60

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: For whites, 5.95 and for blacks, 12.24, giving a general average for disease of 10.63. For the same month during 1909, the annual average death rate per thousand from disease among whites was 11.95, and blacks, 8.25, giving a general average of 9.08; and for the same month during 1910, whites, 3.58, and blacks, 9.46, giving a general average of 7.89.

Among employes during the month, the deaths from the principal diseases were as follows: Chronic nephritis, 4; dysentery, clynical, 1; haemoglobinuric fever, 3; lobar pneumonia, 14; tuberculosis, 5; typhoid fever, 1; leaving 14 deaths from all other diseases, and 15 deaths from external violence.

No cases of yellow fever, small pox, or plague originated on or were brought to the Isthmus during the month.

Respectfully,

Geo. W. Goethals, *Chairman.*

Family Quarters.

Applications for married quarters were on file on October 1, as follows:

District.	List No 1.	List No. 2.
Ancon	1	34 (3)
Ancon Hospital	....	6 (2)
Balboa	....	28 (6)
Bas Obispo	....	26 (3)
Corozal	....	38 (1)
Cristobal	6	111
Culebra	....	25 (3)
Empire	1 (1)	63 (33)
Gatun	4	120 (42)
Gorgona	2	74 (33)
Las Cascadas	2	25 (1)
Pedro Miguel	1	47 (12)
Porto Bello	....	9 (7)
Tabernilla	....	1
Toro Point	....	6 (2)
Total	17 (1)	613(148)

Note—The figures in parenthesis show the number of applicants already occupying regular or nonhousekeeping family quarters at stations other than those at which applications are filed.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Culebra, C. Z., on Sunday, October 22, 1911, at 5.45 p. m.

A concert will be given at Corozal, October 29, at 7.30 p.m.

Sailing of Cristobal.

The sailing date of the steamship *Cristobal* has been changed from 5.00 p. m. Sunday, October 22, 1911 to 5.00 p. m. Saturday, October 21, 1911.

OFFICIAL CIRCULARS.

November 3, a Holiday.

Culebra, C. Z., October 16, 1911.

Circular No. 414:

Friday, November 3, 1911, the anniversary of the Independence of the Republic of Panama, will be observed as a holiday in the Canal Zone, and, as far as possible, all public business will be suspended on that day.

Geo. W. Goethals,
Chairman and Chief Engineer.

Employment of McClintic-Marshall Men.

Culebra, C. Z, October 12, 1911.

Heads of Departments and Divisions:

Ex-employees of the McClintic-Marshall Construction Company should not be employed by the Isthmian Canal Commission or the Panama Railroad Company unless they can show clearances from the McClintic-Marshall Construction Company indicating that there is no objection to their employment on the Isthmus.

Geo. W. Goethals,
Chairman and Chief Engineer.

Acting Chief Quarantine and Health Officers.

Ancon, C. Z. October 10, 1911.

Special Order:

During the absence of Dr. J. C. Perry, Dr. Fleetwood Gruver will act as Chief Quarantine Officer, signing all correspondence as "for and in the absence of Chief Quarantine Officer."

Dr. M. E. Conner in addition to his other duties will act as Health Officer, Panama, signing all papers as "for and in the absence of Health Officer."

By direction of Chief Sanitary Officer.

John L. Phillips,
Assistant Chief Sanitary Officer.

Acting Chief Clerk.

Cristobal, C. Z., October 12, 1911.

During the absence on leave of Mr. Wm. F. Shipley, effective today, Mr. Wm. T. McCormack will act as chief clerk of the Commissary and Subsistence Departments.

Eugene T. Wilson,
Subsistence Officer.

Sale of Public Buildings.

Office of the Chief Quartermaster,
Culebra, C. Z., October 9, 1911.

Sealed proposals for the purchase of any or all of sixty-five (65) buildings located at Bohio, Tabernilla and San Pablo will be received here until 3 p. m., Saturday, October 28, 1911, and then opened. List of buildings and full information will be furnished on application to any District Quartermaster or to this office. Proposals should be accompanied by certified check, post office money order or cash for 5 per cent of amount of bid. Successful bidders will be given the Isthmian Canal Commission freight rate on material contained in buildings purchased. Envelops containing proposals should be endorsed, "Proposals for the purchase of buildings," and addressed to Col. C. A. Devol, Chief Quartermaster, Culebra, C. Z.

Misdirected Letters.

Ancon, C. Z., October 18, 1911.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Aiken, J.
Blake, Master Arter
Critchlow, H. T.
Cunningham, Earl
Ellis, Miss Leontine
Espie, L
Ford, A. P.
Harrold, Wm. (2)
Hartenstine, Charles
Hershey, A. D.
Jay, William C.
Jones, F. R.
Knight, Miss Gwendolyn
McGowan, E. P. (2)
McKenzie, Zachariah
Moor, Crawford
Morris, Miss Mable
Oaks, Major John C.
Ortiz, Don. Carlos
Peterson, U. C.
Ricard, R.
Robinson, Mrs. Charles E.
Sexton, William
Woods, Louis F.

LETTERS UNCALLED FOR OCTOBER 11.

Baker, William H.
Barker, Herbert
Barrett, Joseph
Bragg, C. L.
Cleveland, Houston
Dagley, F. H.
DeSuze, V. G.
Diamond, R
Evans, Fred
Fonda, Geo. H.
Gray, Dr.
Green, B. J. A.
Handyside, Mrs. Lemor
Holt, Mack
Kieman, J. C.
Maxwell, Berton H.
McCaslin, O. W.
McDonald, Mrs. Iris
McDonald, Daniel B. (2)
Mitchell, W. H.
Mitchell, J. A.
Morris, Miss Mable
Payiablas, George
Porter, F. W.
Smart, Fred
Spencer, J. Garfield
Will, Jas. C.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon and Balboa during the week ending October 14:

Clyde, October 8, from New York, with 3 cases insulated tape, for Mechanical Division.

Riverside, October 10, from Hoquiam, Wash., with 23,990 pieces lumber, 2,525 pieces switch ties, 4 pieces spud timber, for stock.

Alcana, October 10, from New York, with 111,868 bags cement for Atlantic and Pacific Divisions.

Metapan, October 12, from New York, with 250 cases ash cans, for stock; 26 pieces rock skips for Atlantic Division.

Cristobal, October 12, from New York, with 132,840 bags cement, for Atlantic and Pacific Divisions.

Atenas, October 12, from New Orleans, with 6,270 pieces lumber, 2,143 bales straw, 454 bales hay, for stock; 1,500 pieces cross arms, for Panama Railroad Company; 99 pieces piling, for Atlantic Division; 6 cases packing, for Mechanical Division; 4 cases school supplies for Department of Civil Administration.

Allianca, October 12, from New York, with 17 crates galvanized pails, 123 kegs bolts and rivets, 15 cases paper tablets, 20 cases black lead, 25 cases machinery, 20 cases rubber hose, 100 cases candles, 100 cases laundry soap, 350 rolls roofing paper, 15 bundles straw board, 17 bundles life-preservers, 7 cases paint, 100 kegs paint, 52 cases castings, 15 packages D. bars, 125 pieces iron pipe, for stock; 8 pieces dredge bucket, 75 pieces wheelbarrows, for Pacific Division; 100 kegs rivets, 10 cases electrical supplies, 25 cases rubber boots, for Atlantic Division; 22 cases metal polish, for Department of Civil Administration; 573 bundles castings, 175 bundles car springs, 158 barrels sand, 6 cases crane parts, for Mechanical Division; and a miscellaneous carge, the whole consisting of 2,307 packages, weighing 252 tons.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending October 25, 1911 (75th meridian time):

Date.	High.	Low.	High.	Low.
	A.M.	A.M.	P.M.	P.M.
October 19	1.10	7.30	1.45	7.50
October 20	2.10	8.20	2.35	8.40
October 21	2.53	9.05	3.20	9.25
October 22	3.35	9.45	4.00	10.05
October 23	4.10	10.25	4.40	10.45
October 24	4.50	11.05	5.15	11.20
October 25	5.23	11.40	5.50	......

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, October 14, 1911. All heights are in feet above mean sea level.

Day and Date.	Station.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Oct. 8	128.2	94.2	47.4	16.3	16.1
Mon., Oct. 9	129.2	94.9	47.9	16.5	16.2
Tues., Oct. 10	126.9	93.5	47.3	16.3	16.2
Wed., Oct. 11	126.3	92.8	47.2	16.2	16.0
Thurs., Oct. 12	128.0	94.0	46.8	15.8	15.8
Fri., Oct. 13	126.8	93.4	46.5	15.7	15.6
Sat., Oct. 14	127.0	93.3	46.1	15.4	15.4
Height of low water	125.0	92.0	44.0		

Rainfall from October 1 to 14, 1911, Inclusive.

Stations.	Maximum in one day.	Date.	Total for period.
Pacific Section	*Ins.*		*Ins.*
Ancon	4.47	9	5.68
Balboa	2.58	9	3.86
*Miraflores	1.04	5	2.76
Pedro Miguel	1.19	5	5.50
Rio Grande	2.34	5	9.35
Central Section—			
Culebra	2.64	1	9.65
*Camacho	2.91	1	10.60
Empire	2.15	1	8.91
Gamboa	1.46	6	5.65
Alhajuela	1.75	3	4.65
*Gorgona	.92	10	3.52
San Pablo	1.34	12	3.73
Tbernilla	1.10	10	3.30
Bohio	1.41	3	5.73
*Monte Lirio	2.09	6	5.20
Atlantic Section—			
Gatun	1.45	12	6.70
*Brazos Brook	1.67	13	4.50
Cristobal	2.09	12	5.72
Porto Bello	2.67	2	†8.00
*Nombre de Dios	1.30	12	4.21

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—value midnight to midnight. †To 5 p. m., October 13.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line; the Panama Railroad Company's dates being subject to change.

NEW YORK TO CRISTOBAL.

Advance	P. R. R.	Wednesday	Oct. 18
Panama	P. R. R.	Tuesday	Oct. 24
Allianca	P. R. R.	Tuesday	Oct. 31

CRISTOBAL TO NEW YORK.

Colon	P. R. R.	Tuesday	Oct. 24
Advance	P. R. R.	Monday	Oct. 30
Panama	P. R. R.	Sunday	Nov. 5
Allianca	P. R. R.	Saturday	Nov. 11

NEW YORK TO COLON.

Zacapa	U. F. C.	Thursday	Oct. 12
Prinz Eitel Friedrich	H.-A.	Friday	Oct. 13
Atrato	R. M.	Saturday	Oct. 14
Almirante	U. F. C.	Thursday	Oct. 19
Prinz August Wilhelm	H.-A.	Saturday	Oct. 21
Santa Marta	U. F. C.	Thursday	Oct. 26
Prinz Sigismund	H.-A.	Friday	Oct. 27
Thames	R. M.	Saturday	Oct. 28
Metapan	U. F. C.	Thursday	Nov. 2
Prinz Joachim	H.-A	Saturday	Nov. 4
Zacapa	U. F. C.	Thursday	Nov. 9
Prinz Eitel Friedrich	H.-A	Friday	Nov. 10
Trent	R. M.	Saturday	Nov. 11
Almirante	U. F. C.	Thursday	Nov. 16
Prinz August Wilhelm	H.-A.	Saturday	Nov. 18
Santa Marta	U. F. C.	Thursday	Nov. 23
Prinz Sigismund	H.-A.	Friday	Nov. 24
Oruba	R. M	Saturday	Nov. 25
Metapan	U. F. C.	Thursday	Nov. 30
Prinz Joachim	H.-A	Saturday	Dec. 2
Zacapa	U. F. C.	Thursday	Dec. 7
Prinz Eitel Friedrich	H.-A	Friday	Dec 8
Magdalena	R. M	Saturday	Dec. 9
Almirante	U. F. C.	Thursday	Dec. 14
Prinz August Wilhelm	H.-A.	Saturday	Dec. 16
Santa Marta	U. F. C.	Thursday	Dec. 21
Prinz Sigismund	H.-A.	Friday	Dec. 2

COLON TO NEW YORK.

Metapan	U. F. C.	Thursday	Oct. 19
Prinz Joachim	H.-A.	Tuesday	Oct. 24
Zacapa	U. F. C.	Thursday	Oct. 26
Prinz Eitel Friedrich	H.-A.	Saturday	Oct. 28
Trent	R. M	Tuesday	Oct. 31
Almirante	U. F. C	Thursday	Nov. 2
Prinz August Wilhelm	H.-A.	Tuesday	Nov. 7
Prinz Sigismund	H.-A.	Saturday	Nov. 11
Oruba	R. M	Tuesday	Nov. 14
Metapan	U. F. C.	Thursday	Nov. 16
Prinz Joachim	H.-A	Tuesday	Nov. 21
Zacapa	U. F. C.	Thursday	Nov. 23
Prinz Eitel Friedrich	H.-A	Saturday	Nov. 25
Magdalena	R. M	Tuesday	Nov. 28
Almirante	U. F. C.	Thursday	Nov. 30
Prinz August Wilhelm	H.-A	Tuesday	Dec. 5
Santa Marta	U. F. C.	Thursday	Dec. 7
Prinz Sigismund	H.-A.	Saturday	Dec. 9
Clyde	R. M	Tuesday	Dec. 12
Metapan	U. F. C.	Thursday	Dec. 14
Prinz Joachim	H.-A	Tuesday	Dec. 19
Zacapa	U. F. C.	Thursday	Dec. 21

NEW ORLEANS TO COLON.

Parismina	U. F. C.	Wednesday	Oct. 11
Turrialba	U. F. C.	Saturday	Oct. 14
Abangarez	U. F. C.	Saturday	Oct. 21
Cartago	U. F. C.	Wednesday	Oct. 25
Atenas	U. F. C.	Saturday	Oct. 28
Turrialba	U. F. C.	Saturday	Nov. 4
Heredia	U. F. C.	Wednesday	Nov. 4
Abangarez	U. F. C.	Saturday	Nov. 11
Cartago	U. F. C.	Wednesday	Nov. 15

COLON TO NEW ORLEANS.

Parismina	U. F. C.	Thursday	Oct. 19
Atenas	U. F. C.	Thursday	Oct. 19
Carrillo	U. F. C.	Thursday	Oct. 26
Turrialba	U. F. C.	Thursday	Oct. 26
Cartago	U. F. C.	Thursday	Nov. 2
Abangarez	U. F. C.	Thursday	Nov. 2
Tivives	U. F. C.	Thursday	Nov. 9
Atenas	U. F. C.	Thursday	Nov. 9

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; ships for New Orleans in the coastwise service on Thursdays at 4 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, OCTOBER 25, 1911. No. 9.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Adress all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Contracts for Lock Operating Materials.

After undergoing tests in the States, at the plant of the manufacturer, the two machines for operating the cylindrical valves of the locks have been approved, and the makers, The Wheeling Mold and Foundry Company, have been awarded the contract for the whole number of machines necessary, 118 in all. During the manufacture some minor changes were made with a resulting economy of six dollars on each machine, the contract cost per machine now being \$875, a total of \$103,250. A contract for 12 auxiliary valve machines has been let to the same manufacturer.

Three bids were received for the copper conductor rail from which the towing locomotives for the locks will collect electric current, and the lowest, that of the Wheeling Mold and Foundry Company, \$166,045.63, has been accepted. The rail will be made by the extrusion process. It will be a modified "T" section with straight sides and a return at the base. A cross section looks like two capital "L's" placed back to back. It will be 2½ inches wide at the base, 3⅛ inch leg, and will weigh 6.07 pounds per foot. It will be made in sections 22½ feet long, and 127,000 linear feet will be required.

The contract for trial motors for the miter gate forcing machines has been let to the Allis-Chalmers Company. If these motors prove satisfactory upon test 42 more may be purchased.

Hydraulic Excavation in Pacific Entrance.

At the southern end of the Miraflores lock pit a barrier of earth separates the pit from the Pacific waters in the channel which has been dredged from Balboa to this point. A mile below this barrier, a cofferdam is being thrown across the channel and when it is completed the water within the lagoon thus formed will be pumped out and the present barrier and the area between it and the new one will be excavated to 45 feet below mean sealevel, with a bottom width of 500 feet. Most of the excavation will be made hydraulically, by the use of the monitors which are now employed in the southern end of the present pit. The new cofferdam, which lies to the south of the central pumping station, will not interfere with its tidal water supply or with the diversion of the Rio Grande. The silt pumped out of the new excavation will be used mostly to fill in the swamp in front of Corozal, extending as far south as Diablo Hill. Watertight fence will be built along the western edge of the swamp, to retain the water pumped in until the sediment deposits.

Work on the new cofferdam has so far advanced that the trestle, which forms its nucleus, will be completed by November 1. The greatest depth of the channel at this point now is 23 feet. Spoil from the northern end of Miraflores pit will then be dumped on both sides of the trestle, to form a dam several feet higher than high tide, with a top width of not less than 30 feet. This will be the last barrier between the locks and the Pacific. When the locks and the channel excavation between them and the cofferdam are completed, water will be let into the space south of the locks and the cofferdam will be removed by dredges.

The Atlantic Entrance.

In the subaqueous excavation of the Atlantic entrance channel, the portion from the initial point (Mile 0) to Mile 2 has been completed. The depth of the channel is 41 feet below mean sealevel, the bottom width is 500 feet and the slope of the sides, 1 on 3. In the remainder, from Mile 2 to Mile 6, the depth at present varies from 40 to 20 feet, decreasing as the channel approaches Mile 5½, which is at Mindi. Between the initial point and Mindi, dredges have removed approximately 23,000,000 cubic yards of soft clay and rock. On account of silting, the net excavation now amounts to some 14,000,000 cubic yards.

The completion of the work of the two 70-ton steamshovels engaged at Mindi, about the first of January, will mark the end of dry excavation in the canal prism in the Atlantic Division. Excavation thereafter in the portion between Mindi and Gatun will be by dredges. The pipeline dredge *Sandpiper* is already making its way from Gatun toward the shovel pit at Mindi, in accordance with this program.

Zone Automobile Fire Apparatus.

Bids will be opened on October 30, at the Washington office for two fully equipped automobile combination fire engine and hose wagons for the Canal Zone Fire Department, one each for Ancon and Cristobal.

They will be of the latest and most approved design, and with material and workmanship of the highest quality. The wheel base will be not less than 144 inches, so constructed as to facilitate turning in a short space and to give proper distribution of the load, and the tread will be not less than 56 inches. The apparatus will have a carrying capacity when fully equipped of not less than 2,500 pounds, and the engine must furnish sufficient power to drive it at a rate of 20 miles per hour up a 12 per cent grade, or 50 miles per hour on level roads, the maximum speed to be set at about 40 miles per hour. The motor, water-cooled, will be not less than 80-horsepower capacity and will have either four or six cylinders, cast in pairs. Two separate and distinct ignition systems will be provided, one of the Bosch high-tension magneto, and the other the Atwater-Kent battery system or its equal. Lubrication and cooling devices will be arranged so as to lubricate and cool the machine in the most approved manner. The fuel capacity will be not less than 20 gallons of gasoline carried in a copper tank equipped with proper feed arrangements.

The apparatus will be equipped with rotary fire pump or a piston pump with a capacity of not less than 700 gallons per minute against a pump pressure of 120 pounds, with all parts so made that they will permit of pumping muddy salt water without corrosion or deterioration. There will be two 4-inch suction connections. The shaftings will be made of chrome nickel steel, hardened and ground, with wide, strong bearings. The pump will be equipped with standard fire-engine pump gauges, air and blow-off valves, an automatic relief or churn valve, and either three or four discharge valves of the quick-opening lever fire-engine type, two to be on one side and one or two on the other.

The hose body of the apparatus will be well-seasoned hardwood, reenforced at the edges and on inner and outer sides, with a capacity of 1,200 feet of 2½-inch cotton, rubber-lined, fire hose. The sides and rear of the apparatus will have steps to carry eight men, and the driver's seat will accommodate two men.

Work of Dredge Badger.

The ladder dredge *Badger*, formerly *No. 14*, which has been excavating in the Pacific entrance channel, is being overhauled at the Balboa shops. When it returns to commission it will be placed on single shift, working while the tide is not too high to prevent its reaching bottom. The *Badger* is an old French dredge, picked up in 1906 and rebuilt. It went into active commission on September 24, 1907. While in the American service it has excavated approximately 4,463,000 cubic yards of earth and rock.

Steamshovel No. 132 in the Borrow Pit at Mount Hope.

During the month of September, Steamshovel No. 132, working in the borrow pit near Mount Hope, excavated 42,600 cubic yards, place measurement, of which 32,400 cubic yards are classified as rock, and 10,200 cubic yards as earth. This material is used in making fills in connection with the new docks at Cristobal, and the site of the new hotel on Colon Beach. The shovel is served

NOTES OF PROGRESS.

(Continued.)

by three trains of about ten 10-yard dump cars each. Delays were as follows: Mining, 3.00; repairs, 0.45; moving shovel, 11.15; cutting out shovel (three times), 3.30; waiting for cars, 5.30; a total of 24 hours. The shovel was under steam 200 hours, and working 88 per cent of that time. The average output per day was 1,704 cubic yards, place measurement.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 70.5 per cent completed, 159,207 cubic yards, out of a total of 225,000, having been placed at the close of work on October 21. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
October 16	116	5.30	1
October 17	36	2.00	1
October 18	100	5.30	1
October 19	116	6.00	1
October 20	69	3.00	1
October 21	128	6.00	1
Total	565	28.00	1
Previously reported	159,207		
Grand total	159,772		

Ancon Crusher.

A statement of rock crushed at the Ancon quarry during the week ending October 21, follows:

Date.	Hours worked.	Cubic Yards.
October 16	7.10	2,690
October 17	7.25	2,989
October 18	7.45	2,285
October 19	5.25	2,549
October 20	7.25	2,686
October 21	8.00	2,811
Total	43.10	16,010

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending October 21, follows:

Date.	Hours worked.	Cubic Yards.
October 16	4.11	1,685
October 17	3.56	1,780
October 18	3.48	1,572
October 19	4.37	2,122
October 20	3.33	1,625
October 21	3.27	1,468
Total	23.32	10,252

Visit of Senators.

Among the passengers on the *Ancon*, which arrived at Cristobal on October 21, were the following United States Senators and their friends: Senators Frank B. Brandegee, New London, Conn.; Carroll S. Page, Hyde Park, Vermont; John Randolph Thornton, Alexandria, La.; Joseph L. Bristow, Salina, Kansas; Members Committee on Interoceanic Canals; Lee S. Overman, Salisbury, N. C.; George P. Wetmore, Newport, R. I.; Albert B. Cummins, Des Moines, Iowa; Representative Edwin W. Higgins, Norwich, Conn.; Col. Daniel M. Ransdell, Sergeant at Arms, United States Senate; Mrs. M. G. Zalinski, N. Y.; Mrs. Albert B. Cummins, Des Moines; Mrs. Edwin W. Higgins, Norwich, Conn.; Miss Charlotte B. Ransdell, Washington; Mrs. Arthur B. Grover, Indianapolis; Mrs. Alexander H. Galt, Washington; Mrs. Cleo C. Hardy, Salina, Kansas; the Hon. Michael Kenealy, Stamford, Conn.; Mr. Russel S. Page, Hyde Park, Vermont; Mr. Rogers Wetmore, Newport, R. I.; Mr. Alexander H. Galt, Secretary to Senator Page; Mr. John D. Brown, Secretary to Senator Overman; Mr. Cleo C. Hardy, Secretary to Senator Bristow; Mr. William Gardiner, Assistant Clerk to Committee; Mr. W. T. Chapman, Stenographer to Committee.

The *Ancon* will sail for New York at noon on Tuesday, October 31.

CONCRETE WORK IN THE LOCKS.

Over 68 per cent of the concrete for the locks is in place, the amount at the close of work on October 21, being 2,893,785.5 cubic yards, out of a total of approximately 4,199,400. A total of 33,861.5 cubic yards of concrete was laid in the locks during the week ending October 21.

GATUN LOCKS.

Over 83 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on October 21 being 1,660,999.5 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending October 21, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours daily, and the auxiliary plant 9 hours.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
October 16	2,174	31.46	6	354	5.40	2	56	2,658
October 17	1,680	33.30	6	452	6.40	2	....	2,181.5
October 18	1,776	36.06	6	420	6.40	2	....	2,290
October 19	2,006	33.10	6	396	5.40	2	....	2,502
October 20	1,776	29.12	4	196	2.40	2	....	2,013
October 21	1,452	24.26	8	150	2.40	2	....	1,662
*Portable mixers	....	....	......	418.5	....	......	....	....
Total	10,864	185.10	6	2,386.5	30.00	2	56	13,306.5
Previously reported	....	....	......	....	....	......	....	1,647,693
Grand total	....	....	......	....	....	......	....	1,660,999.5

*The 418½ yards shown for the portable mixers are reinforced concrete. and were placed on the following days: October 16th, 74; October 17th, 49.5; October 18th, 94; October 19th, 100; October 20th, 41; October 21st, 60.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 89 per cent completed, 747,909 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on October 21. The record for each of the six 8-hour working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
October 16	746	19.50	3	424	25.00	4	....	1,170
October 17	632	18.00	3	495	26.00	4	....	1,127
October 18	642	16.00	3	331	17.00	4	....	973
October 19	920	22.00	3	532	27.50	4	....	1,452
October 20	608	17.00	3	489	25.50	4	....	1,097
October 21	702	18.00	3	360	18.55	4	....	1,062
Totals	4,250	110.50	3	2,631	139.55	4	....	6,881
Previously reported	....	....	......	....	....	......	4,411	741,028
Grand totals	....	....	......	....	....	......	4,411	747,909

MIRAFLORES LOCKS.

Over 35.6 per cent of the concrete for the system of two twin locks at Miraflores was in place on October 21, the total amount on that date being 485,070 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Oct. 16	924	31.50	6	1,004	13.80	2	295	24.50	4	....	2,223
Oct. 17	516	16.67	4	1,120	16.50	2	344	28.00	4	....	1,980
Oct. 18	946	25.17	6	788	11.17	2	383	29.00	4	....	2,117
Oct. 19	1,040	25.00	6	1,062	14.90	2	398	27.50	4	....	2,500
Oct. 20	1,362	32.00	6	496	7.67	2	389	26.50	4	....	2,247
Oct. 21	1,224	25.00	6	1,056	14.50	2	327	24.00	4	....	2,607
Total	6,012	155.34	5.67	5,526	78.54	2	2,136	139.50	4	....	13,674
Previou'ly reported	....	....	......	....	....	......	....	....	......	3,693	471,396
Grand total	....	....	......	....	....	......	....	....	......	3,693	485,070

Death from Bubonic Plague.

Herman T. Bolton died at Ancon Hospital on October 17 from bubonic plague. He was born in Germany 35 years ago and had worked for the Canal Commission as a mechanic, and as a building contractor. He left the Isthmus in July, 1911, and went to Colombia and later to Ecuador. He left Ecuador on October 7 on the *Chile* and arrived at the quarantine station in the Bay of Panama on October 11. He entered Ancon hospital on October 13, and died on October 17. The Department of Sanitation makes this statement in regard to the case:

"The case was not recognized as plague until it was discovered to be so on examination at the autopsy, the symptoms presented not being those of plague.

"The danger from a case of this kind is, that fleas at some point where the victim had been may have become infected, and thus pass the disease on to other human beings. To protect against this risk, every place at which the patient had been was disinfected with the expectation of killing all fleas. All persons who had been about the patient were detained over the quarantine period of six days after they had been in contact. The patient left the Quarantine Station on October 13, and as the period of infection is seven days it is believed that anybody exposed at that time has passed the period for the development of the disease; and as he died on the 17th, it is equally probable that anybody exposed in the hospital has passed the infectious period. There is no possibility, therefore, of the disease spreading from this case."

LABOR FORCE AND QUARTERS IN SEPTEMBER.

The total force at work on the Canal and railroad on September 27 was 37,315, as compared with 35,648 at the end of August, 1911; with 35,369 in September 1910, and 35,210 in September 1909. Canal employes numbered 29,623 and railroad employes 7,692. The number of "gold," or white American employes, was 4,112, compared with 4,141 in August, 1911, and with 4,459 in September, 1910. The force report for September 27, follows:

Department.	Silver Employes.*													Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Const'ct'n and Eng'r'ng.	4,351	14	18	227	668	2,707	4,345	40	103	498	4,355	3,335	263	20,944	3,082	24,026
Civil Administration....	162	..	..	2	4	25	......	......	...	.....	......	21	....	214	297	511
Sanitation........	686	..	..	3	2	3	3	1	...	.....	5	392	†8	1,103	368	1,471
Quartermaster's.........	907	..	1	116	144	112	227	1	16	2	134	932	††14	2,606	202	2,808
Subsistence.............	630	..	..	2	.....	......	......	......	...	.....	......	......	....	632	49	681
Disbursements...........	7	..	..	....	.....	......	......	......	...	.....	......	......	....	7	26	33
Examinat'n of Accounts.	5	..	..	....	... .	......	......	......	...	.....	......	......	....	5	88	93
Total.................	6,748	14	19	350	818	2,847	4,575	42	119	500	4,494	4,700	285	25,511	4,112	29,623
Month previous.........	6,657	14	18	350	821	2,714	4,297	44	134	502	4,501	4,410	266	24,731	4,141	28,872

Panama railroad force, 4,218; Panama railroad relocation force, 2,338; Panama railroad commissary force 1,136. Total, 7,692. I. C. C. force, 29,623. Grand total, 37,315.

*All wages specified are in gold.

†Includes 2 at 5 cents.

††Includes 7 at 5 cents.

The employes in the Department of Construction and Engineering on September 27, were distributed, as follows:

Division.	Silver Employes.*													Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Chief Engineer	46	..	..	7	11	14	......	......	...	11	79	27	1	196	170	366
Mechanical..............	210	6	2	19	23	403	79	......	...	.....	680	20	11	1,453	663	2,116
Atlantic................	1,885	6	14	97	329	1,037	1,381	28	...	68	1,005	510	43	6,404	831	7,235
Central.................	1,069	2	..	29	114	498	1,995	1	82	419	956	2,574	148	7,887	770	8,657
Pacific.................	1,141	..	2	75	191	755	890	11	21	....	1,634	224	60	5,004	648	5,652
Total	4,351	14	18	227	668	2,707	4,345	40	103	498	4,355	3,355	263	20,944	3,082	24,026
Month previous........	4,287	14	17	231	657	2,565	4,047	43	115	499	4,432	3,041	248	20,196	3,097	23,293

*All wages specified are in gold.

QUARTERS.

On October 1, there were 24,493 occupants of Commission quarters. Of these, 9,134 were white Americans, of whom 5,122 were men, 2,052 were women, and 1,960 were children. There were 5,639 Europeans of the laborer class, of whom 5,044 were men, 246 women, and 349 children. There were 9,720 West Indian negroes, of whom 7,251 were men, 1,107 women, and 1,362 children. Included in the above were 32 Asiatics, 126 East Indians and 117 Panamans.

The Peruvian bark *Lena* sailed from Punta Arenas, Costa Rica, on October 14 for Balboa with a cargo of between 600 and 700 tons of cocobolo wood for transshipment to New York. This will be the first time that an entire shipload of this wood has gone to the States from Central America, previous shipments having been made by jobbers in smaller lots. The firm which bought and shipped this cargo is that of H. Mann & Co., of New York.

DIET FOR THE TROPICS.

Report of Board Approves Present Diet Offered By Commissary.

The board of physicians convened by the Chief Sanitary Officer under directions from the Chairman, to report as to whether the ration furnished the Commission employes is suitable for their requirements, has submitted its report. The board consisted of Lieut. Col. Chas. F. Mason, Superintendent of Ancon Hospital; Dr. Wm. H. Bell, Superintendent of Colon Hospital; Dr. Samuel T. Darling, Chief of Board of Health Laboratory, and Dr B. W. Caldwell, Superintendent of Santo Tomas Hospital, Panama.

Access was given to all such records as the board should care to consult, and it was authorized to call any witnesses it might desire.

Special attention was given to the testimony of Dr. W E. Deeks, of Ancon Hospital, who maintained that retarded tissue metabolism in tropical countries invalidates dietary rules based on experience in the temperate zone and, particularly, that the food furnished the employes contains too great a proportion of sugar and starch and not enough of green vegetables and fruit. To this Dr. Deeks attributed many cases of stomach and liver disease. He added that fruit juices and the alkaline salts of vegetables facilitate digestive metabolism. In a corollary to its report the board expresses an opinion that the commissary stores should keep on sale at all times such fruits and green vegetables as practicable, "not that an increased supply of these articles is necessary to the health of the employes, but that it would afford variety and contribute to their contentment." In the report proper, the Board came to its conclusions as follows:

"After careful consideration of the letters of the Chairman and the order of the Chief Sanitary Officer convening the Board, it is our understanding that the following are the points to be determined; First—What constitutes a well balanced ration for service in the Tropics? Second—Is such a ration furnished by the Commissary Department? Third—Could any lessening of the sick rate among Isthmian Canal Commission and Panama Railroad employes be effected by a different ration? Fourth—What is the best *diet* for employes on the Isthmus?

1. The Board finds that a great deal of work has been done in the tropics all over the world with a view of determining what is the best ration for a white man in the tropics, and as a result of these labors the following tables, taken from Munson's "Hygiene," may be taken as standard.

Table 1 for white men weighing about one hundred and fifty (150) pounds, at hard labor—

Protein..................	76.18	grams.
Fats.....................	40.00	grams.
Carbohydrates...........	560.00	grams.
Calories.................	2,900.00	grams.

Proportion of carbohydrates to protein, 7½ to 1.

For soldiers under the same circumstances—

Protein..................	100.	grams.
Fats.....................	65.	grams.
Carbohydrates...........	650.	grams.
Calories.................	3,481.	grams.

Proportion of carbohydrates to protein, 6⅔ to 1.

2. In the sense that the ration is a definite quantity of certain articles of food per man, per day, there is no ration furnished by the Commissary Department, the unit of measure being money value and not quantity. But from the figures furnished by the Subsistence Officer, and numerous inquiries and personal investigations made by the members of the Board, we find that the food furnished to the hotels, messes, kitchens, and employes living elsewhere,

is of such quantity, quality and variety as to more than meet the needs of the highest of the above standards and to enable any employe to select such articles of food as the nature of his employment and the amount of exercise he takes may render best for him. Moreover, there is no evidence from the records of Ancon, Colon, and Santo Tomas hospitals, and elsewhere, that the ration furnished the Commission employes is not a well balanced one.

3. The food supplied by the Commissary having been shown to meet the requirements of the best tropical standards, it is our opinion that no lessening of the sick rate could be effected by a different ration. As regards the question of *diet*, however, indiscretions and errors are certainly not more frequent here than in any other part of the world, though there is no doubt that there is some sickness which could be prevented could people be taught to exercise discretion and intelligence in the selection of the food they eat.

4. As the determination of the question of what is the best diet depends upon so many factors, such as age, sex, race, habits, occupation, etc., no directions that we could give would be of any value except in the most general way. The consensus of opinion of the best authorities is that, other conditions being equal, more sugars and starches, and less proteids, should be consumed in the tropics than in colder climates, but the particular diet which is best for any individual should be a matter for determination by his own physician.

Chas. F. Mason, Wm. H. Bell, Samuel T. Darling, B. W. Caldwell.

Villages to Be Abandoned.

Inasmuch as the portion of the Panama railroad between Gatun and Gorgona is to be torn up after the first of February, 1912, on account of the filling of the Gatun Lake area up to 85 feet above sea level, leaving the villages along the present railroad in that section in isolation, the removal of inhabitants is being hastened. Licenses for stores and shops in this area are not issued as of effect after December 31, 1911. Claims are being adujsted and in such cases as necessary the inhabitants will be assisted in their moving.

Villages and settlements which will be inundated by Gatun Lake when the level has reached 85 feet above mean tide are: Lion Hill, Ahorca Lagarto, Bohio, Penas Blancas, Frijoles, Tabernilla, San Pablo, West San Pablo, Bailamonos, Mamei, Juan Grande, Gorgona (partly), Matachin, Bas Obispo (partly), Auguas Claras, Guarapo, Montevistoso, Monte Lirio, and Limon. A new village of Monte Lirio is being built on the relocated Panama railroad. Other new villages on it at present are New Frijoles and Gamboa.

Half a dozen of the present villages will be abandoned from causes other than flooding. They are Miraflores and Pedro Miguel, on account of construction connected with locks, and Mandingo Llano, Rio Grande, Cucaracha, New Culebra and Spanishtown, the existence of which is not regarded as worth the cost of their sanitary maintenance.

Some of the material from the hydraulic excavation at Miraflores is being used to make a fill southwest of the lower lock site on the east side of the Rio Grande, between Riley's spur of the Pacific Division and the Central Division tracks from Bridge 61½ to the bridge crossing the Cardenas River. The fill will raise the surface of the swamp 5 or 6 feet.

SPILLWAY GATE MACHINES.

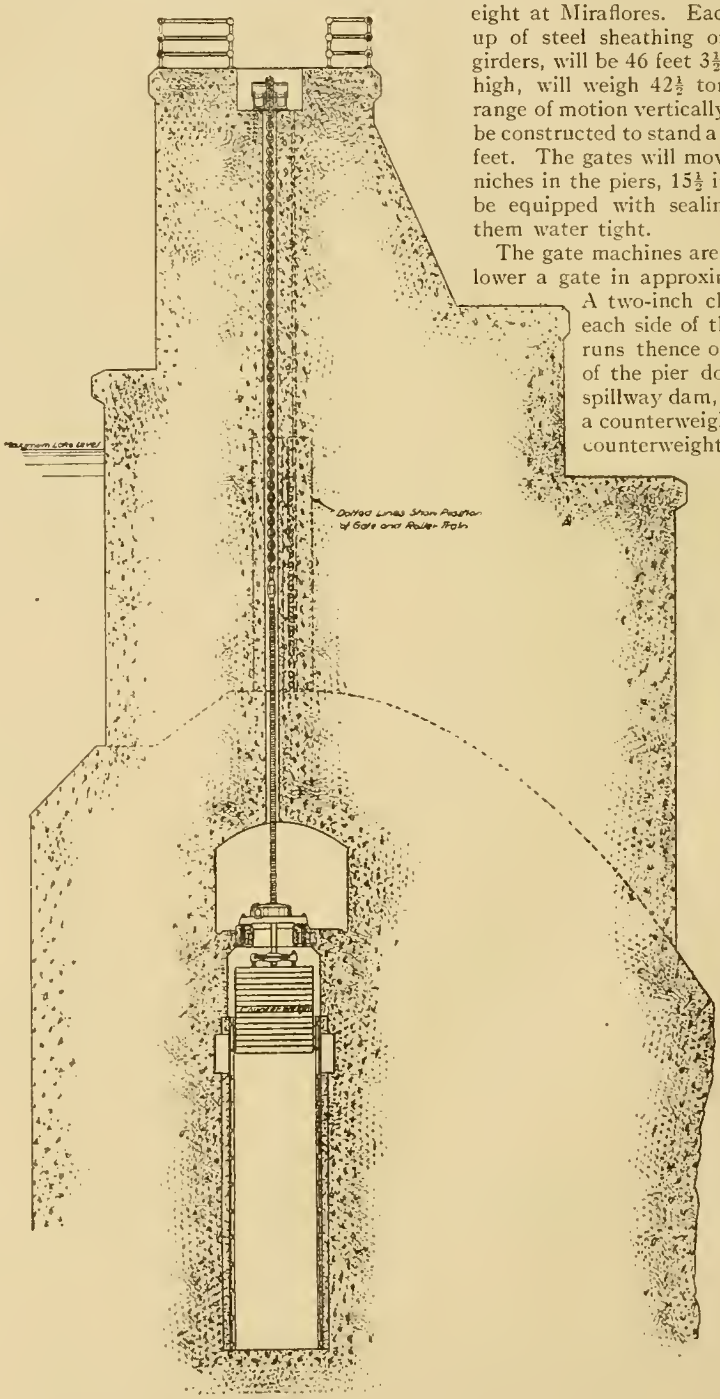
Method of Raising and Lowering Gates to Regulate Water in Lakes.

Each of the twenty-two gates in the spillways at Gatun and Miraflores dams will be operated by a machine erected in a tunnel extending the full length of the spillway dam. Bids for these machines (22 in all) are about to be advertised for in the United States. An article describing the gates was published in The Canal Record of July 12, 1911. The drawings reproduced herewith show the method of operating the gates and the arrangement of the machinery at Gatun spillway, and the principle is the same for the spillway at Miraflores.

The purpose of the spillway and regulating gates at Gatun is to form a means of keeping the level of the lake at approximately 85 feet above mean tide, by affording a method of allowing the flood water of the Chagres valley to escape without flowing over the dam. To this end a concrete lined channel 285 feet wide has been made through the center of the dam, and across it a concrete dam is being constructed to a height of 69 feet above sea level. Its crest is on the arc of a circle and it is 808 feet long, although it closes a channel only 280 feet wide. (At Miraflores the dam is straight and is 432 feet long). Between concrete piers rising from the top of this dam with their tops at 115.5 feet above sea level will be mounted the regulating gates of the sluice or Stoney type. Each will close an opening between piers 45 feet wide. There will be fourteen on the Gatun spillway dam and eight at Miraflores. Each gate will be built up of steel sheathing on a framework of girders, will be 46 feet 3½ inches long, 19 feet high, will weigh 42½ tons complete, have a range of motion vertically of 22½ feet, and will be constructed to stand a maximum head of 18 feet. The gates will move on roller trains in niches in the piers, 15½ inches deep, and will be equipped with sealing devices to make them water tight.

The gate machines are designed to raise or lower a gate in approximately ten minutes. A two-inch chain is attached to each side of the top of a gate, and runs thence over a sheave on top of the pier down into a pit in the spillway dam, in which there hangs a counterweight of cast iron. The counterweights on a set of two chains practically balance the weight of the gate, so that the machines need only to overcome the frictional resistance. The counterweights are guided, and travel in pits beneath the floor of the machinery tunnel. Each weight is connected with the chain by a bronze screw which is driven vertically by a worm wheel nut—motor driven by a worm—the resulting movement being to raise or lower the gate.

The machinery tunnel extends the full length of the spillway, within the dam, and contains all the operating machinery. The screws for lifting the gates pass through this tunnel, extending downward to the counterweights and upward to the hoisting chain through openings provided for the purpose. The machinery, located in the tunnel, consists

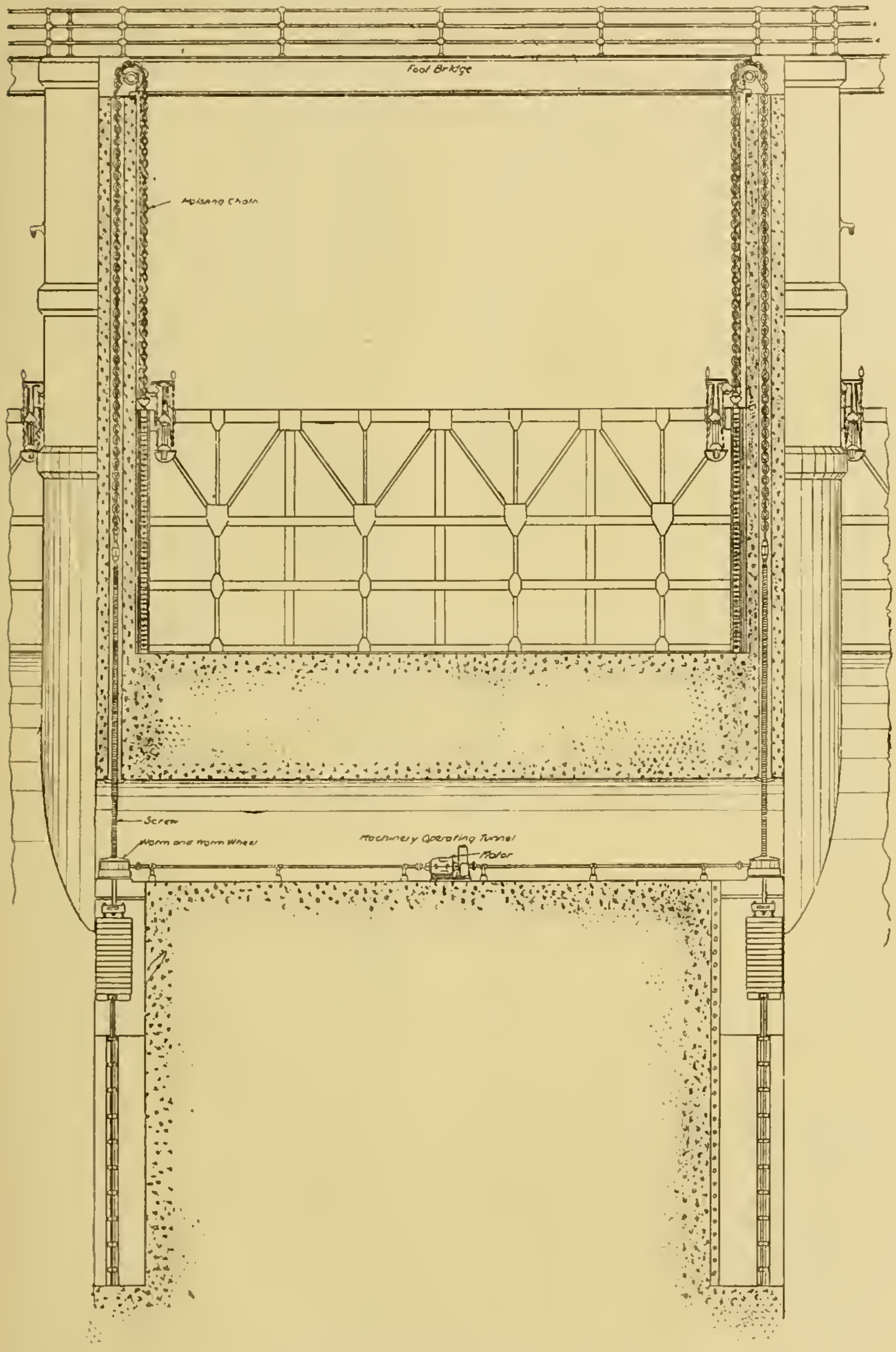


Sectional elevation through counterweight pit and chain pipe showing chain, screw, machinery tunnel, worm nut, counterweight and counterweight pit.

of the worm nuts, worm wheel castings, motor driven shaft, and limit switch. The worm wheel casing is anchored by foundation bolts to the counterweight pit cover, at the level of the machinery tunnel floor, and takes the thrust of the worm nut through roller bearings.

The motor is located on a bed plate about midway between screws and is coupled directly to the driving shaft. The driving shaft carries a worm at each end which engages the worm nut. The driving shaft is supported by six adjustable shaft bearings.

The 2-inch hoisting chain is connected to the upper end of the lifting screw, passing through a pipe to the top of the gate pier, runs over a sheave and down to the gate where it is fastened approximately in the plane of the center of gravity of the gate.



PLAN SHOWING WITH RELATION TO ONE ANOTHER STONEY GATE, HOISTING CHAIN, SCREW, WORM AND WORM WHEEL, COUNTERWEIGHT AND PIT.

The ¾-inch roller train chain is fastened at its upper end to the 2-inch chain sheave bearing and is fastened, after passing over five sheaves, to a bracket which is fastened to the gate. One sheave is fastened to the roller-train, two to the bracket, and the other two sheaves are normally held by the bracket but are movable. The sheaves on the bracket move with the gate until the gate is above water, where the movable sheaves are engaged by a casting projecting from the pier, thus causing the roller train to rise more rapidly. When the gate reaches the end of lift the roller train is well clear of the water, thus protecting it from floating debris. Just before the roller train starts to move more rapidly than normal the gate is moved bodily upstream a short distance by two rollers near the ends, so that the pressure is removed from the roller trains, enabling them to move freely.

The limit switch, geared to the driving shaft, prevents over-travel at the two ends of travel of the screw, by cutting off current from the motor in the direction of travel. The limit switch allows the motor to be reversed at the ends of travel or at any intermediate point. A portable hand operating device is provided which is clamped to the driving shaft when in use and operated by two cranks for emergency purposes.

Seepage water will be allowed to accumulate in the counterweight pits, ordinarily, and these pits will be freed from water by portable pumping outfits, of which three will be purchased. Each outfit will consist of a vertical centrifugal pump of 45 gallons a minute capacity against a 32-foot head, driven by a vertical induction type motor, the two rigidly connected and forming a unit, which will be waterproof so that the motor can operate under water up to a 30-foot head. Eye bolts or rings in the upper side of the casing will afford a means of lowering the outfit into the pits.

Washington Hotel Reopened.

The Washington Hotel in Colon, having been moved from the site upon which the new hotel is to be erected, to an adjacent site, has been reopened for transient and regular trade. The interior has been completely refinished. Regular meals are served from 4.30 to 8 a. m., 11 a. m. to 1 p. m., 5 to 7.30 p. m. on working days, and on Sundays and holidays, from 5 to 8 a. m., 11.30 a. m. to 1.30 p. m., 5.30 to 7.30 p. m. A special service by the card is maintained throughout the day and until 9 o'clock at night. Rooms may be procured at any time of the day or night.

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to August 31, follows:

Periods.	Department of Civil Administration	Department of Law	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total.
To June 30, 1909	3,427,090.29	....	9,673,539.28	69,622,561.42	78,022,606.10	....	160,745,797.09
Fiscal year, 1910	709,351.37	....	1,803,040.95	26,300,167.05	2,863,088.83	....	31,675,648.20
Fiscal year, 1911	755,079.44	....	1,717,792.62	27,463,401.31	3,112,334.60	....	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,084,530.55	317,751.38	....	2,615,340.33
Augut, 1911	74,768.45	1,878.27	156,954.79	2,282,614.77	359,978.95	86,243.14	2,962,438.37
Total	5,039,184.77	4,405.62	13,488,963.47	127,753,275.10	84,675,759.86	86,243.14	231,047,831.96

PERSONAL.

Among the passengers on the *Ancon*, which arrived at Cristobal on October 21, were Mr. W. G. Comber returning from annual leave of absence; Capt. Mark Brooke, U. S. A., who represented the United States in the transfer of French canal properties on the Isthmus on May 4, 1904, with Mrs. Brooke, and Maj. S. D. Butler, U. S. M. C., with Mrs. Butler and children.

Mr. Edward Schildhauer, accompanied by Mrs. Schildhauer, returned from the States on the *Colon*, which arrived at Cristobal on October 18.

Missionary Society.

The Ladies Missionary Society of Empire Christian League held a meeting at the home of Mrs. E. P. Beck on Friday, October 20, when the members of the Missionary Society of the Methodist Church, Panama, were the guests. There were 46 present. Following the business session, there was a program consisting of songs by Mrs. E. M. Keyser and papers read by Mrs. H. A. Smith, Mrs. Fuller and Mrs. Fearon. The lesson on missionary work in Porto Rico was conducted by Mrs. A. A. Nellis. On Friday evening, November 17, the society will hold an entertainment in the Commission chapel the proceeds of which will be used for mission work in the Canal Zone.

Red Cross Finances.

A financial statement of the Canal Zone Chapter, American National Red Cross, for the month of September, follows:

RECEIPTS.

September 1, On hand.........	$3,079.14	
September 6, Proceeds of ball at Gatun for the Endowment Fund..	84.63	
Total receipts..........................		$3,163.77

DISBURSEMENTS.

September 6..For deportation of West Indian in Colon Hospital to St. Lucia...........$	40.00	
September 8..To Treasurer, National Red Cross, Washington, total amount of Endowment Fund......	709.63	
September 9..Relief of wife of of Spaniard in the penitentiary.....	5.00	
September 21..Loaned to American against his vacation pay........	168.00	
September 23..Loaned to American against his vacation pay........	161.00	
September 23..Relief of destitute American negress	25.00	
September 25..Relief of negro woman. Colon fire sufferer...........	10.00	
September 29..Deportation of disabled ex-employee to Trinidad.....	20.00	
Total Disbursements..........		$1,138.63
October 1..Balance on hand......		$2,025.14

JOHN L. PHILLIPS, *Treasurer*.

Approved:
WM. L. SIBERT, *Acting Chairman*.

Postal Business and Canal Zone Revenues.

During the month of September there were 19,408 money orders issued, amounting to $451,216.02. Of this amount, $340,976.03 was issued payable in the United States, $109,328.56 in the Canal Zone, $779.50 in Martinique, and $131.90 in Costa Rica. The fees amounted to $2,039.30, and the amount of orders paid and repaid was $131,009.41.

Postal sales during the month amounted to $7,339.00, and newspaper postage to $2.23.

The revenue collections for the month were as follows:

Bicycle and chauffeur licenses,..$	41.00
Insurance collections, annual fees	50.00
Motor vehicle licenses..........	63.00
Taxes, licenses, etc............	15,247.67
Miscellaneous collections.......	3.18
Total.........................	$15,404.85

Sale of Canal Buildings.

The sale of buildings in the canal villages of Bohio, Tabernilla, and San Pablo, advertised below, is made because the work is almost completed in the lake region and also because the villages will be isolated after the present railroad is torn up during the approaching dry season on account of the impending rise of the water in the lake, due to the construction of the spillway dam at Gatun to elevation 50 feet above sea level. A previous sale advertised resulted in no satisfactory bid for the whole number of buildings to be sold at that time being received. The Quartermaster's Department then placed a minimum price on each building the total being about twice that of the highest bid received. Already enough buildings have been purchased under this arrangement to aggregate more than the original high bid. The buildings contain good lumber, which is expensive on the Isthmus, and they are used principally in building houses along the relocation of the Panama railroad.

Missing Men.

Any one having information regarding the whereabouts of Joseph H. Golding, who is supposed to be on the Isthmus of Panama, is requested to communicate with the American Legation, Panama.

Any one having information regarding the whereabouts of Tim Silberman, at one time living in El Paso, Texas, and who is now supposed to be on the Isthmus of Panama, is requested to communicate with THE CANAL RECORD.

The steamship *Stanley Dollar*, from San Francisco, now in the bay, awaiting a berth at the Balboa docks, encountered such heavy weather while in the Gulf of California that a part of the deck cargo had to be jettisoned. Twenty thousand feet of lumber, consigned to dealers in Panama, was thrown overboard.

Sale of Public Buildings.

OFFICE OF THE CHIEF QUARTERMASTER,
CULEBRA, C. Z., October 9, 1911.

Scaled proposals for the purchase of any or all of sixty-five (65) buildings located at Bohio, Tabernilla and San Pablo will be received here until 3 p. m., Saturday, October 28, 1911, and then opened. List of buildings and full information will be furnished on application to any District Quartermaster or to this office. Proposals should be accompanied by certified check, post office money order or cash for 5 per cent of amount of bid. Successful bidders will be given the Isthmian Canal Commission freight rate on material contained in buildings purchased. Envelops containing proposals should be endorsed, "Proposals for the purchase of buildings," and addressed to Col. C. A. DEVOL, Chief Quartermaster, Culebra, C. Z.

Tug Service to Porto Bello, Nombre de Dios, and Toro Point.

Effective June 26, the following schedule will be maintained between Dock 13, Cristobal, Nombre de Dios, Porto Bello, and Toro Point:

Tug *Reliance* will leave Dock 13 daily, except Sundays, at 7 a. m., with two barges for Nombre de Dios, returning at once with two bargesto Gatun.

Tug *Mariner* will leave Dock 13 daily, except Sundays, at 9 a. m., with three barges for Porto Bello, returning to Gatun as soon as barges are loaded.

Tug *Porto Bello* will leave Dock 13 Saturdays at 9 a. m., light, for Porto Bello. This tug will leave Porto Bello, light, at 2 p. m., arriving at Dock 4, Colon, in time for passengers to catch train No. 7, leaving Colon at 4.35

Tug *Porto Bello* will leave Dock 13 Sundays at 7 p. m., for Porto Bello, returning at once.

Tug *Mariner* will leave Dock 13 daily, except Sundays, at 6.30 a. m., for Toro Point, returning at once.

Tug *Mariner* will leave Dock 13 Sundays at 9.30 a. m., for Toro Point, returning at once

A tug will leave Dock 13 on Wednesdays, Saturdays, and Sundays, at 4.30 p. m., for Toro Point, returning at 5.30 p. m.

A tug will leave Dock 13 on the 20th of each month at 6 a. m., for Porto Bello and Nombre de Dios, returning to arrive at Dock 4, Colon, about 4.30 p. m.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Corozal, C. Z., Sunday, October 29, 1911, at 7.30 p. m. The program follows:

1. March—*Happy Days*......................Levi
2. Selection—*The Pink Lady*................Caryl
3. Reverie—*Silent Thought*..............Morrison
4. Overture—*Jolly Robbers*.................Suppe
5. (*a*) Two Step—*Billy*....................Kendis
   (*b*) —*Chicken Reel*.........................Daly
6. Excerpts from Faust...................Gounod
7. Paraphrase—*Rocked in the Cradle of the Deep*.....Lovenberg
8. Characteristic Morceau—*On Tip Toe*.....Hosmer
9. Medley Selection—*Rossiter's Popular Songs*.....Alford
10. March—*The Espanola Prance*...............Shay

CHARLES E. JENNINGS, *Musical Director*.

The next concert will be given at Gatun, C. Z., November 5, at 5 p. m.

Misdirected Letters.

ANCON, C. Z., October 25, 1911.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Baird, J. W.
Bernsee, W. F.
Brown, W. R.
Brown Miss Catherine
Burke, Henry
Chapins, Mde. Jeanne
Coffman, Lee
Collins, Ned
Collins, C. C.
Compton, Rolla
Davis, Geo
Dew, Mrs. G. E. (pkg.)
Fransen, Captain Hans
Hall, Frank
Halliman, Thos. (pamphlet)
Hobbs, H. C.
Jameson, Dr. Ed.
Kirton, Charles
Magerhans, A.
Markham, C. W. (pkg.)
McNair, Athol C.
Miller, H. A.
Mil.ion, Mrs. Margret
Newhard, S. W.
Pemberton, Mrs. Jas. Rex
Prior, Benjamin (2)
Rider, Philip
Seffers, A. M.
Sims, L. C.
Smith, Mrs. L.
Worsleu, Robert
Wright, Mrs. J. W.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending November 1, 1911 (75th meridian time):

DATE.	Low.	High.	Low.	High.
	A.M.	A.M.	P.M.	P.M.
October 26............	12.00	6.00	12.20	6.25
October 27............	12.38	6.32	1.00	7.05
October 28............	1.20	7.10	1.40	7.45
October 29............	2.05	7.50	2.30	8.33
October 30............	3.00	8.43	3.25	9.35
October 31............	4.10	9.55	4.30	10.50
November 1...........	5.15	11.15	5.40	11.55

Married.

SCHOFIELD-BEVERLY—On September 28, at Geneva, Illinois, Laura Marguerite Beverly of Maple Park, Ill., to Ralph Avery Schofield of Griffith, Ind., the Rev. G. R. Dixon officiating. Canal Zone residence, Gorgona.

TABER-WILCOX—On October 12,1911, at I. C. C. Chapel, Cristobal, Jean Harding Taber, of Gorgona to Jennie L. Wilcox, of Manistee, Michigan, the Rev. Carl H. Elliott officiating. Canal Zone residence, Empire.

MORRIS-FAIRBANKS—On September 17, in Ancon, Myrtle Fairbanks of Tabernilla to Edwin H. Morris of Gorgona, the Rev. Harry Compton, officiating.

WOODS-HUGHS—On September 27, at Ancon, Adelaid M. Hughs of Washington, D. C., to Samuel E. Woods, the Rev. Harry Compton officiating.

BERNALL-BARROWS—On October 1, Myrtle Barrows to William F. Bernell, both of Pedro Miguel, the Rev. Harry Compton officiating.

The following vessels arrived at, or departed from, the port of Balboa during the week ending October 21:

Arrivals—October 16, *San Juan*, from San Francisco; October 16, *Mantaro*, from Callao; October 16, *Guatemala*, from Callao; October 16, *Aztec*, from San Francisco; October 20, *Kansas City*, from San Francisco.

Departures—October 17, *Pachitea*, to Callao; October 17, *Quito*, to Guayaquil; October 18, *Leggett*, to San Francisco; October 18, *Manga Reva*, to San Francisco; October 18, *Chile*, to Guayaquil; October 19, *Pennsylvania*, to San Francisco; October 21, *Palena* to Valparaiso.

OFFICIAL CIRCULARS.

Old Laborers To Be Retained.

CULEBRA C. Z., October 16, 1911.

MEMORANDUM FOR THE ACTING CHIEF QUARTERMASTER:

The following is quoted from a report submitted by the office of the Secretary to the Commission:

"There have been several Spanish laborers in this office of late who were discharged by the Quartermaster's Department at Balboa. They claimed that about 10 Spaniards were discharged on account of "reduction of force" in one week from September 20, to 28, and that 13-cent West Indian laborers were taken on in their place.

* * * * * * * * * * * * * * * * *

I do not consider that it is good policy at this time to substitute West Indians for Europeans. If this is being done in the Quartermaster's Department, please issue orders to stop it.

I am also advised that work was found recently for a small gang of new arrivals from Spain, and that speakers at the laborers' meeting at Las Cascadas yesterday referred to this and complained bitterly that men who have served for years were being laid off to make room for these new arrivals. There is justice in this complaint, and I do not want any more new men employed while we are discharging laborers with satisfactory records on account of reduction in force.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Superintendent, Mechanical Division.

CULEBRA, C. Z., October 16, 1911.

CIRCULAR No. 415:

Effective October 17, 1911, Mr. J. J. Eason will act as Superintendent of the Mechanical Division during the absence of Mr. A. L. Robinson, on leave.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Surcharge for U. S. Army.

CULEBRA, C. Z, October 20, 1911.

CIRCULAR No. 169-K:

Effective this date, the same surcharge will apply on material and labor furnished detachments of the United States Army stationed on the Canal Zone as on material and labor furnished the Government of the Canal Zone.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Gatun-Culebra Labor Train Transportation.

CULEBRA, C. Z., October 20, 1911.

CIRCULAR No. 416:

On and after November 1, 1911, no cash fares are to be accepted on the Gatun-Culebra labor train.

Twenty-trip tickets, one dollar each, have been provided for those persons authorized to use this train, and will be on sale at the office of the Division Engineer at Gatun, beginning October 20, 1911. These tickets will be accepted on the train at any time thereafter.

The pads of tickets must be presented to the conductor, who will detach tickets for the trip.

Only those who are authorized by the Chairman and Chief Engineer, or the Division Engineer of the Atlantic Division, shall be permitted to use this train.

All employes of the Atlantic Division are required to obtain their tickets from the office of the Division Engineer at Gatun. Any other persons authorized to use this train can secure twenty-trip tickets from the Conductor.

Single trip tickets of five cents each will be sold at the office of the Division Engineer at Gatun only in special cases.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Quarantine Period in Plague Cases.

ANCON, C. Z. October 21, 1911.

TO ALL CONCERNED:

The Chief Sanitary Officer directs that in future the Quarantine period for passengers and members of the crew of all vessels coming to the port of Balboa or Colon from plague infected ports, be extended from six to seven full days from the hour of leaving the infected port.

In case a plague suspect is taken from the vessel at Quarantine on reaching the Isthmus, or dies while the vessel is en route to the Isthmus, the full seven day period shall be reckoned from the removal of the passengers and the disinfection of the ship at the Quarantine Station, where suspects should be isolated, the contacts segregated to themselves, and the other passengers segregated as far as possible in groups.

Passengers being held in Quarantine, when ill from any cause at the time of landing, or who develop illness irrespective of the cause, while being held at the Quarantine Station, must be at once isolated, given special attendance, and not discharged from Quarantine until authorized by the Chief Quarantine Officer, to whom all cases should be reported on the first symptoms of illness.

In the absence of the Chief Quarantine Officer from the Isthmus at any time, information relative to infected ships, suspects, and cases of illness of detained passengers coming from infected ports, shall be reported promptly to this office, first by telephone, to be followed by letter.

JOHN L. PHILLIPS,
Assistant Chief Sanitary Officer.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The schedule of moving picture entertainments for the week of October 30 to November 4, is as follows: Monday, Gorgona; Tuesday, Gatun; Wednesday, Cristobal; Thursday, Culebra; Friday, Empire; Saturday, Corozal.

The standing of the Isthmian Bowling League is as follows:

Team.	Won.	Lost.	P. C.
Empire	35	13	.729
Gatun	29	19	.604
Cristobal	25	23	.521
Gorgona	25	23	.521
Marines	18	24	.329
Culebra	16	32	.333

The standing of the Isthmian Basket Ball League is as follows:

Cristobal	3	0	1.000
Culebra	2	1	.667
Gorgona	2	1	.667
Gatun	2	1	.667
Empire	0	3	.000
Corozal	0	3	.000

The results of basket ball games played October 21, follow: Cristobal, 23, Culebra, 7; Gorgona, 23, Empire, 11; Gatun, 16, Corozal, 5; games to be played October 28 are: Cristobal at Corozal; Gorgona at Culebra; Gatun at Empire.

CULEBRA.

The following are the results of the league bowling games for the week:

Thursday evening, October 19.

Culebra.				Camp Elliott.			
Mengel	145	178	224	O'Sullivan	142	112	146
Herrington	170	128		Weight	180	151	141
Driscoll	177	150	159	Clouse	196	154	151
Case	184	157	164	Swartz	150	182	157
Dougherty	235	212	180	Austin	137	137	124
Cushing			157				
Total	910	825	884		805	736	719

CULEBRA AT CAMP ELLIOTT.

Mitchell	146	159	185	McDonald	150	142	118
Brown	112	136	103	Jauke	145	151	
Sjoblum	129	127	117	Estelle	138	155	105
Baumer	131	135	171	Krouth	171	137	126
Fay	127	154	100	Martin	167	183	157
				Calalds			138
Total	645	711	676		771	768	644

Saturday night, October 21.

Culebra.				Gorgona.			
Herrington	160	144	139	Arnold	144	157	157
Warner	147	142	169	Sims	157	158	155
Driscoll	151	171	171	Wurderman	137	118	143
Case	191	168	194	Orr	152	168	176
Dougherty	176	189	136	Roper	180	153	151
Total	825	814	805		772	754	782

High scores made during the week were as follows: Big Pins—Dougherty 235, 212; Mengal, 224; Case, 203, 200; Warner, 208. Duckpins—Bartlett, 115, 109; Hobart, 107, 101; Palmer, 103; McIlvaine, 100; Fox 107.

There will be a concert at the clubhouse on Sunday, October 29.

EMPIRE.

The following high scores were bowled on the alleys during the past week: Ten Pins—Parkis, 253; Pinney, 203, 204, 208, 203; Rode ghiro, 217; Spinks 204; Gustaveson, 222; Huson, 216. Duckpins—Dakin, 105; Pinney, 100; Grund, 102; Payne, 101.

Empire took three games from the Camp Elliott team in the league series on Saturday October 21, on the Empire alleys, the scores were as follows:

Empire.				Camp Elliott.			
Gustaveson	168	171	209	Egult	126	178	152
Spinks	170	145	174	Kritel	132	148	146
Gorham	188	119	177	McDowel	174	159	133
Pearson	185	168	198	Janke	142	124	153
Huson	167	181	172	Catalde	148	132	108
Total	878	784	930		722	746	692

On the Camp Elliott alleys Saturday, October 21, Camp Elliott took three games from Empire.

At the meeting of the literary society held on Friday, October 20 the debate "Resolved, that women should be given the right of suffrage" was won by the negative. The next meeting will be held on Friday, October 27.

GORGONA.

The gymnasium pictures have arrived, and are on sale at the desk. Those who placed orders for these pictures should call for them as promptly as possible.

At the monthly song service on Sunday evening, October 22, a short program was rendered by the Arion Trio, followed by a talk by C. H. Elliott of Colon, after which the regular song service was held.

GATUN.

Gatun won all three games of bowling from Cristobal at Gatun on Saturday evening, October 21. Gatun also won two games at Cristobal.

Gatun defeated Corozal in the match game of basket ball on Saturday evening, October 31. The score was 16 to 5. Mr. W. H. Warr of Empire acted as refreee.

A club for the discussion of social reform questions is being organized at the clubhouse.

The following bowlers have rolled 100 or over during the first half of October, in all 36 games: Delano, 1; Teall, 6; Claherty, 3; Bailey, 2; Ruch, 2; Vierbuchen, 4; Wells, 3; Doyle, 2; Carter, 1; Gayer, 1; Wurster, 4; Green, 2; Barte, 5. Eight men rolled 200 or over in ten pins during the first half of October: Beattie, 1; Myers, 1; Chamberlain, 1; Galloway, 1; Hodges, 2; Severn, 4; DeMoll, 1; Barte, 4. DeMoll and Hodges lead in the ten pin ragtime tournament, score, 1,100. Green and Wurster lead in the ten pin ragtime, score, 573. Galloway's game of 225 in ten pins and Barte's game of 124 in duckpins are the highest so far for October.

The standing of the leaders in the pool tournament up to October 21, was as follows:

Name.	Won.	Lost.	P. C.
Bailey	3	0	1.000
Jones	2	0	1.000
Shiler	2	0	1.000
Young	1	0	1.000
Hughes	1	0	1.000
McKay	3	1	.750

The billiard tournament will begin on Thursday night with ten players.

CRISTOBAL.

There was an attendance of 53 at the Literary and Debating Club on Wednesday evening, October 18. The subject of "Disarmament" was discussed. Decision was in favor of the negative.

The basketball team won the game played with the Culebra team on the local floor Saturday evening, October 21, by a score of 23 to 7. The Cristobal team thus takes first place in the Isthmian Basket Ball League.

The Gatun bowling team took two games out of three from the Cristobal team on the local alleys on Saturday evening, October 21.

The scores were as follows:

Gatun.				Cristobal.			
Dickson	158	171	169	Gibson	168	148	155
Myers	178	170	108	Blackburn	145	159	151
Durand	205	172	203	Collins	166	145	173
Beattie	162	171	168	Bullard	182	168	198
DeMoll	175	150	160	Louch	177	160	183
Total	878	835	808		838	780	860

At the next moving picture entertainment Messrs. Glick and Weston will entertain the audience during change of films.

The regular session of the Debating Club, scheduled for November 1, has been postponed until November 8 at which time an adress will be delivered on "Abraham Lincoln," by Mr. W. F. Morrison.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon and Balboa, during the week ending October 21:

Mackinaw, October 14, from San Francisco, with 1,090 pieces redwood lumber, for Mechanical Division.

Allemania, October 16, from New York, with 30 pieces steel beams, for Panama Railroad Company; 50 coils galvanized wire, 42 kegs horse shoes, 75 cases water coolers, for stock.

Colon, October 18, from New York, with 156 barrels clay, 140 drums calcium carbide, for Mechanical Division; 59 kegs bolts, for Pacific Division; 141 kegs bolts, 6 cases wire cloth, 36 crates locomotive crane, for Atlantic Division; 21 cases castings, 35 barrels rosin, 12 cases hose, 30 barrels sea coal facing, 10 cases blasting batteries, 20 reels wire rope, 22 drums oil, 50 kegs wire nails, 83 bundles iron pipe, 122 pieces iron pipe, 25 cases paper napkins, for stock; 30 cases drugs, and sundries, for Sanitary Department; and a miscellaneous cargo, the whole consisting of 1,417 packages, weighing 265 tons.

Turrialba, October 19, from New Orleans, with 182 pieces piling, for Atlantic Division; 175 pieces ties, for Pacific Division; 3,364 pieces lumber, 17 pieces piling, 29 cases brass bolts, 124 bundles hand cars, for stock; 38 cases incandescent lamps, 36 pieces locomotive tires, for Mechanical Division.

Zacapa, October 19, from New York, with 37 crates handles, 11 cases files, for stock.

Almerian, October 20, from Liverpool, with 200 barrels crude carbolic acid for stock.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning October 21, 1911.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	†20
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24

MISCELLANEOUS.	
Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Veal, per pound	1.20
Beef, per pound	25
Eggs, fresh, dozen	†32
one-half dozen only	†17
Bluefish, fresh, per pound	14
Halibut, fresh, per pound	15
Shads, fresh, each	70
Shad roes, fresh, per pair	35
Oysters, 1 qt. kegs, per keg	50

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	†1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each 60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.00
Broilers, milk fed, each	†70
corn fed, each	†60
Turkeys, per pound	26
Squabs, each	35
Capons, each	2.10
Fryers, corn fed, each	60
Partridges, each	50
Grouse, each	50

CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30

DAIRY PRODUCTS.	*Price.*
Butter—Creamery special, per pound	†35
Cheese—Roquefort, per pound	38
Philadelphia cream, cake	10
Philadelphia cream, cake	18
Young America, per pound	20
Swiss, per pound	26
Edam, each	1.00
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**25
Buttermilk, bottle	**15
Fer-mil-lac, bottle	**25
Ice cream, quart	‡25
½-gallon	‡50

VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	6
Cabbage, per pound	4
Cucumbers, per pound	4
Carrots, per pound	3
Cauliflower, per pound	7
Lettuce, per pound	12
Onions, per pound	3½
Peppers, green, per pound	10
Potatoes, sweet American, per pound	3
Potatoes, white, per pound	3
sweet, per pound	2
Pears, alligator, each	6
Parsnips, per pound	4
Romaine, per pound	15
Squash, per pound	3
Turnips, per pound	3
Tomatoes, per pound	6
Yams, per pound	3
Apples, per pound	5
Cantaloupes, each	†10
Grapes, per pound	†10
Grape Fruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, California, per dozen	36
Oranges, per dozen	12
Peaches, pound	†10
Plums, per pound	10
Pears, per pound	6

*Indicates reduction from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
‡Sold only from commissaries; no orders taken for delivery

Rainfall from October 1 to 21, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section	*Ins.*		*Ins.*
Ancon	4.47	9	7.87
Balboa	2.58	9	5.59
*Miraflores	2.00	18	5.32
Pedro Miguel	1.73	10	7.52
Rio Grande	2.34	5	11.52
Central Section—			
Culebra	2.64	1	11.46
*Camacho	2.91	1	13.10
Empire	2.15	1	10.65
Gamboa	1.76	21	8.61
*Juna Mina	2.03	21	7.92
Alhajuela	1.75	3	8.31
*El Vigia	1.50	3	9.41
*Gorgona	1.13	21	6.93
San Pablo	1.34	12	4.55
Tabernilla	1.48	21	5.87
Bohio	1.41	3	7.51
Atlantic Section—			
Gatun	1.45	12	8.68
*Brazos Brook	1.67	13	6.03
Colon	2.09	12	8.02
Porto Bello	2.67	2	†8.50
*Nombre de Dios	1.30	12	4.77

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—value midnight to midnight. †To 5 p. m., October 20.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, October 21, 1911. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Oct. 15	127.8	93.8	46.5	15.2	15.1
Mon., Oct. 16	126.4	93.0	45.6	15.0	14.8
Tues., Oct. 17	127.7	93.8	47.0	14.8	14.6
Wed., Oct. 18	128.6	94.5	47.6	14.9	14.6
Thurs., Oct. 19	127.5	94.1	47.6	15.0	14.7
Fri., Oct. 20	127.8	94.0	47.4	14.9	14.8
Sat., Oct. 21	127.5	94.0	48.4	15.6	15.1
Height of low water	125.0	92.0	44.0		

LOST—In Ancon, gold locket from watch fob with monogram on the back "T. L. R." A reward is offered for its return to Dr. Thos. L. Ramsey, Ancon Hospital.

Lost—Canal Medal No. 1,350, Bar 826. Reward if returned to H. A. Hart, Division Engineer's Office, Empire.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line; the Panama Railroad Company's dates being subject to change.

NEW YORK TO CRISTOBAL.			
Panama	P. R. R.	Tuesday	Oct. 24
Allianca	P. R. R.	Tuesday	Oct. 31
Colon	P. R. R.	Monday	Nov. 6
Advance	P. R. R.	Saturday	Nov. 11
Panama	P. R. R.	Saturday	Nov. 18
Allianca	P. R. R.	Friday	Nov. 24

CRISTOBAL TO NEW YORK.			
Ancon	P. R. R.	Tuesday	Oct. 31
Advance	P. R. R.	Monday	Oct. 30
Panama	P. R. R.	Sunday	Nov. 5
Allianca	P. R. R.	Saturday	Nov. 11
Colon	P. R. R.	Saturday	Nov. 18
Advance	P. R. R.	Friday	Nov. 24

NEW YORK TO COLON.			
Prinz August Wilhelm	H.-A.	Saturday	Oct. 21
Santa Marta	U. F. C.	Thursday	Oct. 26
Prinz Sigismund	H.-A.	Friday	Oct. 27
Thames	R. M.	Saturday	Oct. 28
Metapan	U. F. C.	Thursday	Nov. 2
Prinz Joachim	H.-A	Saturday	Nov. 4
Zacapa	U. F. C.	Thursday	Nov. 9
Prinz Eitel Friedrich	H.-A	Friday	Nov. 10
Trent	R. M.	Saturday	Nov. 11
Almirante	U. F. C.	Thursday	Nov. 16
Prinz August Wilhelm	H.-A.	Saturday	Nov. 18
Santa Marta	U. F. C.	Thursday	Nov. 23
Prinz Sigismund	H.-A.	Friday	Nov. 24
Oruba	R. M	Saturday	Nov. 25
Metapan	U. F. C.	Thursday	Nov. 30
Prinz Joachim	H.-A	Saturday	Dec. 2
Zacapa	U. F. C.	Thursday	Dec. 7
Prinz Eitel Friedrich	H.-A	Friday	Dec 8
Magdalena	R. M	Saturday	Dec. 9
Almirante	U. F. C.	Thursday	Dec. 14
Prinz August Wilhelm	H.-A	Saturday	Dec. 16
Santa Marta	U. F. C.	Thursday	Dec. 21
Prinz Sigismund	H.-A	Friday	Dec. 2

COLON TO NEW YORK.			
Zacapa	U. F. C.	Thursday	Oct. 26
Prinz Eitel Friedrich	H.-A.	Saturday	Oct. 28
Trent	R. M	Tuesday	Oct. 31
Almirante	U. F. C	Thursday	Nov. 2
Prinz August Wilhelm	H.-A.	Tuesday	Nov. 7
Prinz Sigismund	H.-A.	Saturday	Nov. 11
Oruba	R. M	Tuesday	Nov. 14
Metapan	U. F. C.	Thursday	Nov. 16
Prinz Joachim	H.-A	Tuesday	Nov. 21
Zacapa	U. F. C.	Thursday	Nov. 23
Prinz Eitel Friedrich	H.-A	Saturday	Nov. 25
Magdalena	R. M	Tuesday	Nov. 28
Almirante	U. F. C.	Thursday	Nov. 30
Prinz August Wilhelm	H.-A	Tuesday	Dec. 5
Santa Marta	U. F. C.	Thursday	Dec. 7
Prinz Sigismund	H.-A.	Saturday	Dec. 9
Clyde	R. M	Tuesday	Dec. 12
Metapan	U. F. C.	Thursday	Dec. 14
Prinz Joachim	H.-A	Tuesday	Dec. 19
Zacapa	U. F. C.	Thursday	Dec. 21

NEW ORLEANS TO COLON.			
Abangarez	U. F. C.	Saturday	Oct. 21
Cartago	U. F. C.	Wednesday	Oct. 25
Atenas	U. F. C.	Saturday	Oct. 28
Turrialba	U. F. C.	Saturday	Nov. 4
Heredia	U. F. C.	Wednesday	Nov. 4
Abangarez	U. F. C.	Saturday	Nov. 11
Cartago	U. F. C.	Wednesday	Nov. 15

COLON TO NEW ORLEANS.			
Carrillo	U. F. C.	Thursday	Oct. 26
Turrialba	U. F. C.	Thursday	Oct. 26
Cartago	U. F. C.	Thursday	Nov. 2
Abangarez	U. F. C.	Thursday	Nov. 2
Tivives	U. F. C.	Thursday	Nov. 9
Atenas	U. F. C.	Thursday	Nov. 9

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; ships for New Orleans in the coastwise service on Thursdays at 4 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

The Leyland steamship *Asian* will sail for Texas City direct on the 30th inst.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, NOVEMBER 1, 1911. No. 10.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Adress all Communications

THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Bound Volumes of The Canal Record.

A limited number of bound copies of Volume 4 of THE CANAL RECORD will soon be ready for distribution for official purposes. These copies will be marked FOR OFFICIAL USE ONLY—*Property of I. C. C.* Heads of Departments are requested to advise the Secretary of the Commission at Ancon of the number of these volumes that they will require for use in their departments, citing the names of the persons to whom they should be issued.

Inner Harbor at Pacific Entrance.

Excavation of the basin of the permanent harbor at the Pacific entrance was begun on October 20 by the ladder dredge *Badger* which is removing the spit lying between the Canal channel and the lower waters of the Rio Grande, which empties into the Pacific opposite the sand wharf at Balboa, east of the Canal. The portion of the spit to be taken out lies between Station 2,242 and Station 2,200, the latter being about 4,200 feet from the southern end of the spit. The average width of the section to be excavated is about 1,000 feet, so that its area is approximately 90 acres. Its surface is now 8 feet above mean sea level, and it is submerged at extreme high tide. It is to be excavated to a depth of 40 feet below mean tide. Borings show that to this depth the material to be excavated is practically all mud and clay.

Within a short time another dredge will join the *Badger* in this work. This is only a portion of the excavation for the inner harbor as the present plans call for a basin of about 246 acres. Plans for the docks have not yet been decided upon.

Naos Island Trestle.

The building of a double track trestle 30 feet wide, from the end of the present one on the Naos Island breakwater to the island, a distance of 2,700 feet, will begin next week, for the purpose of increasing the amount of spoil that may be dumped daily and thus hastening the completion of the breakwater.

In building the trestle rows of piling, transverse to the axis, will be driven at intervalse of 13½ feet. Each row or bent will contain 9 piles, the 7 inside piles to be driven straight, while the outside piles will have a batter of 2 inches to a foot The cap of each bent will be 12 by 14-inch by 30 foot, and each trackway will rest on four stringers, 8 by 16 inches and 28 feet long, laid on the caps at a height of 11 feet above mean sea level. There will be a space between the ties of the two tracks of about ten feet and in this will be built track for the pile driver, thus allowing it to drive on either side of the trestle without moving from the center track. The piles will be 70 feet in length, with auxiliary piles 40 feet long, which may be spliced on if the penetration requires a longer pile. At such joints there will be four wood splice-plates, each 3 by 8 inches and 6 feet long, and bolted on with six ¾-inch machine bolts through the piles.

Between the present end of the trestle and Naos Island, scows have been dumping rock, both to form a base for the breakwater and to steady the piles which will be driven through this spoil to the rock below. The average depth to rock is about 60 feet below mean sea level, and the scows are laying a base about 200 feet wide. Since the sinking of the trestle does not begin until the top of the fill is above mean tide, the fill will be made to that elevation clear out to the island. Then the remainder of the fill will be made by trains dumping from the island end. In this way any sinking of trestle due to the jar of unloading will occur at the outer end, and the dumping of spoil between the point of subsidence and the mainland need not be interfered with.

Gatun Dam.

A natural depression near the downstream edge of the east wing of Gatun Dam, about 300 yards from the spillway, is being filled with spoil from the pipeline suction dredge *No. 86*, which is working in a borrow pit near the French channel. The fill will reinforce the dam and do away with a malarial swamp. It will require about a quarter of a million cubic yards of material. After the hydraulic filling has raised the surface of the area to that of the adjacent ground, earth and rock will be dumped on it from trains.

From the upper edge of the east wing of the concrete intake at Gatun spillway, a trestle has been built, parallel to the axis of the stream and in line with the instream side of the concrete work, to the point where a former trestle crosses the spillway gap, along the upper edge of the dam. Dumping from the new trestle was begun Monday and it is purposed to fill in the space between the trestles and the east dam, raising the surface from an average of 15 feet above sealevel to plus 45 feet. Approximately, 75,000 cubic yards of spoil will be required for this fill.

Miraflores Locks.

Excavation for the lower chamber of Miraflores Locks cut across what was once the channel of a small river. as is shown by the strata of gravelly material with which the bed had become filled. To block possible slides of the loose earth, the dirt is being removed to bedrock several feet back of the line of the lock wall and holes drilled into the rock for the insertion of steel rails, around which, as reinforcement, a concrete retaining wall is to be constructed. Excavation at this point is down to the ultimate required level, 55 feet below mean tide.

The Pacific Division has finished the electrical wiring and connecting for berm crane "E," dismantled at Pedro Miguel Locks and rebuilt at Miraflores by the McClintic-Marshall Company, and the crane has begun placing concrete in the east side wall of the upper lock chamber. This is the fourth and last of the berm cranes to be moved. There remain at Pedro Miguel Locks two cantilever chamber cranes, which can still be used to advantage in placing the remainder of the concrete there, in making backfill and in carrying machinery.

Fortification Work.

Work has been begun on a cement shed and office building, 28 by 60 feet, at Toro Point for use in connection with the fortification work at the Atlantic entrance. The building is being constructed of lumber from the old Commission hotel at Culebra. A type 17 house will be erected at Toro Point for the man who will superintend the fortification work under the direction of the Chief Engineer.

The Construction Quartermaster will complete the work of fitting up quarters for the fortification force at the Pacific entrance this week. An article in THE CANAL RECORD of September 27 gave details of the preliminary operations of which the furnishing of quarters forms a part. The quarters are remodeled buildings on Naos Island recently acquired from the Pacific Mail Company as part of its interest in the islands at the southern entrance to the Canal.

An Improved Rail Clamp.

A new rail clamp, invented by W. H. Bates, Superintendent of Steam Shovel Repairs, after a six months' trial, has been adopted and 350 will be put into service.

The function of this clamp is to act as a "stop" when a shovel is moving forward, to prevent its running off the end of the track; also to "block" the truck wheels securely in place when the shovel is working.

The clamp used heretofore was attached to the rail by means of a key driven under the base of the rail, consequently it was necessary to place the clamp between ties. When the track is in mud and water up to the rails the annoyance and delay incident to attaching the clamp are considerable; furthermore, the ties often interfere with locating the clamp where desired.

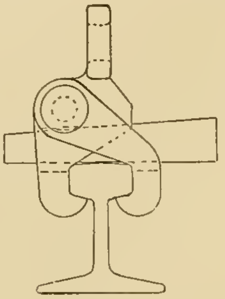
The new clamp is fastened to the rail by

NOTES OF PROGRESS.

(Continued.)

means of a tapered key of steel passing crosswise over the rail and thus permits the clamp to be set directly over a tie, or any place desired. The key being above the rail avoids the mud and water.

The principle on which the clamp works is similar to that of a pair of ice tongs. The clamp consists of two steel castings which form the hooks and body of the ice tongs as well as a convenient handle. These castings are fastened together by means of a heavy rivet which acts as a hinge pin. The hooks bear on the under side of the rail head when the wedge is driven above the rail, and below the hinge pin; thus giving a secure grip on the rail. The cost of the new clamp is considerably less than that of the old style.



RAIL CLAMP INVENTED AT EMPIRE SHOPS.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 71 per cent completed, 160,532 cubic yards, out of a total of 225,000, having been placed at the close of work on October 28. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
October 23	132	7.00	1
October 24	108	5.30	1
October 25	128	7.30	1
October 26	108	6.30	1
October 27	144	7.00	1
October 28	140	7.00	1
Total	760	40.30	1
Previously reported	159,772		
Grand total	160,532		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending October 28, follows:

Date.	Hours worked.	Cubic Yards.
October 23	3.35	1,581
October 24	4.12	1,673
October 25	4.50	2,040
October 26	5.00	2,241
October 27	2.20	1,150
October 28	3.55	1,638
Total	23.52	10,323

Teachers and Clerks, Philippine Service

Examinations have been announced by the Civil Service Commission, which it is expected to hold at Culebra on December 27 and 28, for assistant (male), teacher (male and female), and industrial teacher (male), in the Philippine Service. Applications must be forwarded to this office before December 5.

The entrance salaries for male and female appointees from the above examinations will probably be from $1,000 to $1,200 per annum.

A limited supply of the announcement of the above examinations has been received. Persons interested should request a copy of announcement No. 777, but an application blank should not be requested unless, after reading the announcement, intention is had to apply for one of the examinations. The announcement should be *immediately* returned to this office in order not to delay the dissemination of the information contained therein.

JOHN K. BAXTER,
Secretary, Isthmian Civil Service Board.

CONCRETE WORK IN THE LOCKS.

Over 69 per cent of the concrete for the locks is in place, the amount at the close of work on October 28, being 2,926,698 cubic yards, out of a total of approximately 4,199,400. A total of 32,720 cubic yards of concrete was laid in the locks during the week ending October 28.

GATUN LOCKS.

Over 84 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on October 28 being 1,674,103 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending October 28, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours daily, and the auxiliary plant 9 hours.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
October 23	1,470	25.20	4	474	6.40	2	....	2,010
Oxtober 24	1,462	25.42	4	618	8.40	2	....	2,152½
October 25	1,536	23.18	6	292	5.40	2	54	1,975
October 26	1,812	28.32	6	512	7.20	2	80	2,473
October 27	1,288	21.08	6	512	7.40	2	66	1,927½
October 28	1,848	28.53	6	586	7.30	2	84	2,566
Portable mixers	....	....	......	410	....	......	....	....
Total	9,416	152.53	5.33	3,404	46.30	2	284	13,104
Previously reported	....	....	......	....	....	......	....	1,660,999
Grand total	....	....	......	....	....	......	....	1,674,103

'The 410 yards shown for the portable mixers are reinforced concrete and were placed on the following days: October 23rd, 66; October 24th, 72½; October 25th, 93; October 26th, 69; October 27th, 61½; October 28th, 48.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 90 per cent completed, 754,084 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on October 28. The record for each of the six 8-hour working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
October 23	711	17.00	3	315	16.00	3	12	1,038
October 24	626	25.00	3	195	10.17	3	....	821
October 25	624	18.00	3	317	17.50	3	....	941
October 26	944	24.00	3	268	16.25	4	....	1,121
October 27	720	18.00	3	302	15.50	3	....	1,022
October 28	698	18.00	3	443	24.75	3	....	1,141
Totals	4,323	120.00	3	1,840	100.17	3.17	12	6,175
Previously reported	....	....	......	....	....	......	4,411	747,909
Grand totals	....	....	......	....	....	......	4,423	754,084

MIRAFLORES LOCKS.

Over 36 per cent of the concrete for the system of two twin locks at Miraflores was in place on October 28. the total amount on that date being 498,511 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Oct. 23	1,152	30.20	6	904	12.90	2	384	30.00	5	....	2,440
Oct. 24	930	29.00	6	784	11.50	2	391	27.00	4	....	2,105
Oct. 25	840	25.00	6	964	14.20	2	357	24.75	4	....	2,161
Oct. 26	498	13.17	4	1,030	15.40	2	278	12.50	4	....	1,806
Oct. 27	1,226	27.00	6	858	13.50	2	418	35.00	5	....	2,502
Oct. 28	1,076	32.30	7	900	14.97	2	451	37.00	5	....	2,427
Totals	5,722	156.67	5.83	5,440	82.47	2	2,279	166.25	4.5	....	13,441
Previously reported	....	....	......	....	....	......	....	....	......	3,693	485,070
Grand total	....	....	......	....	....	......	....	....	......	3,693	498,511

COMMISSARY BUSINESS.

Details of Transactions in 1911 Compared with Those of 1910.

The business of the Commissary Department of the Panama Railroad Company during the fiscal year ending June 30, 1911, aggregated $5,754,955.69, an increase of $423,438.88 over the preceding year. Merchandise was imported to the value of $4,267,792.05, as compared with $3,913,519.14 for last year. A classified statement of importations, the figures being for cost, insurance and freight paid delivered on the Isthmus, follows:

CLASS.	1910.	1911.
Groceries	$1,064,075.27	1,278,594.79
Hardware	98,902.50	86,768 86
Dry goods	694,476 67	603,490.18
Boots and shoes	165,303.38	164,168 89
Cold storage supplies.	1,348,376.57	1,573,202.97
Furniture	11,918.59	9,020.48
Tobacco	153,986.84	182,590 96
Raw material	325,453.42	215,375.22
Paper, twine, stationery, etc	51,025.90	54,579.70
Total	$3,913,519.14	4,267,792.05

The relative percentage of goods under each classification sold through the retail stores during the year is as follows: Groceries and staples, 29.20; cold storage, 36.30; dry goods, men's furnishings and notions, 15.41; boots and shoes, 4.36; tobacco, cigars and confectionery, 3.97; hardware, 1.62; furniture, .19; stationery, 1.19; raw material, 7.76.

There were increases in the importations of fresh and pickled meats, and the prices on these were reduced. On some of the staple articles of groceries there were reductions in prices, but as a rule the prices of groceries maintained about the same level as obtained during the previous year. Prices on boots and shoes and standard dry goods were reduced. The following table gives the importations of meat and dairy products, in comparison with the statistics for the fiscal year 1910:

	1910.	1911.
Fresh meats, lbs	5,229,306	5,454,989
Cured and pickled meats, lbs	1,046,029	3,786,869
Cheese lbs	114,192	110,415
Eggs, doz	502,950	692,060
Butter, lbs	471,551	429,267
Poultry lbs	429,575	554,028
Fresh milk, gals	41,901	57,016
Fresh cream, gals	22,900	29,950

Importations of fresh vegetables for the two years were as follows, in pounds:

	1910.	1911.
Potatoes, white	4,586,967	5,250,609
Potatoes, sweet	638,584	787,881
Onions	717,557	1,151,921
Turnips	122,632	107,902
Beets	26,059	53,279
Carrots	91,830	101,788
Cabbage	656,905	640,681
Yams	424,789	193,127
Other vegetables including celery, tomatoes, squash, etc.	622,484	499,952

Fresh fruits were purchased abroad, for the two years, as follows:

	1910.	1911.
Apples, lbs	526,472	668,485
Peaches, lbs	63,944	42,958
Pears, lbs	21,780	45,637
Plums, lbs	17,706	30,825
Grapes, lbs	54,066	62,608
Oranges, doz	236,854	225,984
Lemons, doz	13,574	34,550
Grape fruit, doz	11,837	10,446
Limes, doz	5,493	6,848
Cantaloups, each	59,724	56,155
Watermelons, each	10,845	18 888
Other fruits, lbs	26,726	29,480

Sales and issues to all departments for the two years were as follows:

	1910.	1911.
Isthmian Canal Commission	$1,664,873.66	$1,625,348.77
United States Government	135,068.36	102,138.31
To others for cash	100,901.78	103,706.31
To others for coupons	3,083,064.13	3,609,358.01
Issued to departments of the railroad and used in operation of Commissary	229,328.02	208,223.82
Issued to Panama Railroad Steamship Line	9,501.84	8,904.09
Condemned and damaged goods, shrinkage, etc	108,779.02	98,276.38
Total sales	$5,331,516.81	$5,754,955.69
Average sales and issues per mo.	444,293.07	479,579.64
Stock on hand, June 30	1,391,342.33	997,175.60

A comparison of prices for June, 1911, as against June, 1910, of foodstuffs, shows that of the 262 items into which the goods are classified by the Commissary Department, 32 showed an increase in price in 1911; on 110 items the prices were the same; and on 120 items there were reductions.

Nineteen stores were maintained during the year, located at Cristobal, Gatun, Camp Totten, Monte Lirio, Tabernilla, San Pablo, Gorgona, Las Cascadas, Bas Obispo, Empire, Culebra, Rio Grande, Paraiso, Pedro Miguel, Corozal, Ancon, Porto Bello, and Toro Point. All stores except those at Camp Totten and Monte Lirio are provided with ice boxes of sufficient size to store meats and other perishable goods. Butchers are employed at Cristobal, Gatun, Gorgona, Las Cascadas, Empire, Culebra, Ancon, and Balboa.

MANUFACTURING PLANTS.

Laundry—There was a large increase in this department during the year, 3,581,923 pieces having been handled, as against 2,993,761 pieces during the previous year. During the first part of the year there was a reduction in prices ranging from 12.5 to 15 per cent. The revenue amounted to $98,303.27, as against $90,797.56 last year. The average number of employes served monthly was 7,260, a decrease of five from last year.

Bakery—Sixteen thousand, six hundred and thirty-eight barrels of flour were used during the year ending June 30, 1911, from which there were produced 5,236,474 loaves of bread, 557,557 rolls and 91,581 pounds of cake. The consumption of cake fell off 39,086 pounds from the year before but the amount of bread produced was greater by 344,073 loaves, and of rolls 53,554. The total value of the product for the year was $221,352.06.

Coffee Roasting Plant—During the year 330,491 pounds of coffee were roasted, producing 270,047½ pounds of roasted coffee. The value of the product was $60,543.86.

Ice Plant—The additional tank installed on June 17, 1910, increased the capacity of the plant sufficiently to enable it to meet all demands for ice. The total output for the year averaged about 90 tons per day and the present capacity of the plant is 100 tons per day; 33,267 tons were produced during the year, valued at $206,188.01. During the preceding year the amount manufactured (27,988 tons), had to be supplemented during several months by purchase from private plants locally and importations from New York.

Ice Cream Plant—During the year the ice cream plant was transferred to a new building erected for its use and with an increased capacity. The demand for the product grows steadily and the department anticipates greater increase in the coming year. During the year ending June 30, 1911, the plant manufactured 110,208 gallons, valued at $79,318.80, as against 91,321 gallons, valued at $62,379.93, for the previous year.

Automatic Weighing and Packing Department—By means of this arrangement flour, coffee, beans, rice and similar loose, dry cooking materials are weighed and packed in boxes of convenient measure ready for immediate delivery to the customer. The cost of packing amounts to about $1.90 per ton. Of varied articles a total of 3,915,775 pounds was packed this year, an increase of 1,445,815 over last year.

Power Plant—The installation of a 300-ton compressor, capable of running the entire ice-making and refrigerating plant and affording opportunity to close the other compressors for repairs, was completed during the year. The machinery has recently been subjected to overhauling and painting.

Cold Storage Plant—Additional storage was necessary to take care of increased importations and to provide a safer and more economical method of handling refrigerated supplies. By the conversion of an ice storage room into a cooler and the installation of three new coolers, the storage space was increased by 25,316 cubic feet, affording a total refrigerated storage space of 193,230 cubic feet.

Pickling Tank and Butter Printing Outfit—The contracts under which the Commissary Department has purchased beef have provided that it be taken in the carcass or in the quarter but the greater demand for hindquarters than for forequarters has necessitated a preponderant importation of the former. The price of beef is cheaper by the carcass and the Department has, therefore, constructed during the past year two pickling tanks, with net cubical contents of 595 feet, for the purpose of corning its own beef. By this means it is able to buy beef by the carcass, corn such of the forequarters for which there is no sale, and discontinue the importation of corned beef. The Department supplies from 1,500 to 2,000 pounds of corned beef daily.

Until this year butter has been bought in prints in the States, at an advance of about three cents per pound over butter in bulk. Moreover, in this way the surface exposure is greatly increased and it has to be carefully wrapped in tinfoil and parchment paper to preserve its freshness. A complete butter printing outfit has been installed in the cold storage plant and is now in full operation. It prints daily about 1,400 pounds of butter.

Laboratory and Experimental Kitchen—During the year a laboratory and experimental kitchen were installed. All food products are tested here, both as to quality and weight of package. Extract of vanilla, extract of lemon, bay rum and other similar products are manufactured here, effecting some economy.

American Veterans of Foreign Service.

The next regular muster and camp-fire, of the American Veterans of Foreign Service, will be held at the Culebra Lodge Hall on Saturday evening, November 4.

TEST OF GATE VALVES.

Experiments To Determine Friction Coefficients and Effectiveness of Sealing Devices.

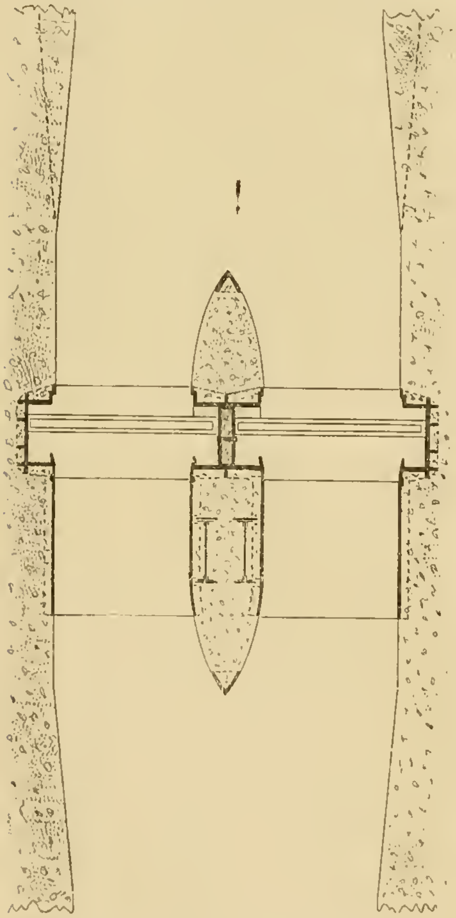
Tests of two Stoney gate valves for the locks, which have been in progress at Gatun for several weeks, have been completed, and the valves have been found satisfactory.

These valves will be installed in the culverts in the side and center walls of the locks, through which water from the upper levels will be let into the lock chambers, and will afford a means of regulating the flow.

When a ship enters one of the chambers on the ascent, the valves above that chamber will be opened and those below will be closed, thus turning water into the chamber and raising the ship. For a ship on the descent, the valves above will be closed and those below opened, thus allowing the water to flow from the chamber to a lower level, and consequently lowering the ship. A complete operation of a valve, letting in or shutting off the water, will require one minute.

At the points where the gate valves will be installed the culverts are 18 feet in diameter. Instead of closing the whole culvert with one valve, it has been divided into two chambers by a reinforced concrete pier in the center.

The plan herewith gives a horizontal section of the valve chambers, showing the center pier, and the niches in which the gates of the valves move. In operation the gates are moved up and down in these niches, on roller bearings, just as one would raise and lower a window, except that the power is applied through a stem fixed to the top of the gate and operated by a machine situated above the valve chamber. The valves consist of iron frames embedded in the concrete walls and movable gates built up of a framework of nickel steel "I" beams sheathed with ½-inch nickel steel buckle plate, with machinery to operate them. They are 18 feet 10 inches high, 10 feet 8 inches wide, and will weigh 21,597 pounds each. An article describing these valves, and others of similar construction; (lower guard gate valves, lateral culvert valves, and bulkhead gates) was published in THE CANAL RECORD of August 9, 1911. In all 130 rising stem gate valves, and 57 other gate valves will be used in the locks, and the tests completed last week apply to the 130 rising stem valves.



HORIZONTAL SECTION THROUGH VALVE CHAMBER, SHOWING CONCRETE PIER DIVIDING CULVERT INTO TWO CHAMBERS FOR VALVE EMPLACEMENT. Length of chamber 53 feet 6 inches; width, 20 feet 3 inches; niches for valves 14½ inches deep; length of pier 25 feet 3 inches, width 4 feet 3 inches.

FRICTION TESTS.

In making these tests two valves were mounted in one of the valve chambers in the west side wall of the locks at Gatun, the culvert above the valves was closed, and the valve chamber was then filled with water to a height of 79 feet. The tests were made to determine the total friction and the effectiveness of the sealing device.

In designing the machinery it was assumed that the friction to be overcome would be 4 per cent of the water pressure. It remained to determine by test the actual frictional resistance of the valves when operated under pressure, which resistance added to the weight of the gates and one half the roller trains equals the weight that each machine must be capable of lifting. On the theoretical assumptions the total weight each machine must lift was placed at 40,000 pounds. The machines were designed to lift 60,000 pounds, and the tests show that the actual weight to be lifted will be between 41,500 and 44,500 pounds. The results of the tests for the determination of the coefficient of friction have been tabulated as follows:

ITEM.	Gate 260	Gate 261
	Lbs	*Lbs.*
Pull required to lift gate—Culvert empty	24,000	25,000
Weight of gate	20,500	20,500
Friction of seals—initial	3,500	4,500
Friction of seals—added for water pressure (1)	4,170	4,170
Friction for seals—total	7,670	8,670
Total pressure on gate—(Calculated—h=79′)	651,000	651,000
Dynamometer pull to break seal	37,500	40,000
Lifting force on upper seal (Calculated)	5,420	5,420
Total upward force	42,920	45,420
Weight of gate—(calculated)	20,500	20,500
Total friction	22,420	24,920
Friction of seal from above	7,670	8.670
Roller friction	14,750	16 250
Dynamometer pull to hold gate	41,500	44,500
Suction	4,000	4,500
Total friction plus suction	26,420	29.420
Coefficient of friction—total (2)	.0344	.0383
Coefficient of roller friction (3)	.0226	.0251
Combined coefficient (4)	.0407	.0460

(1) Friction of seals under water pressure is calculated using 0.25 as coefficient.

$\frac{550''}{144}$ x 62.5 x 69.7 x .25=4170 pounds.

(2) Average coefficient of friction—total .0363

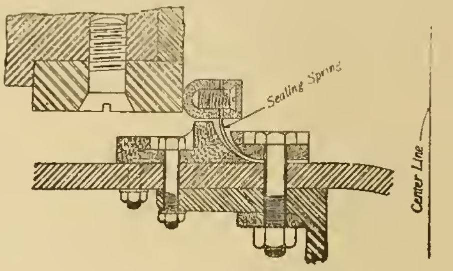
(3) Average coefficient of roller friction .0239

(4) Average combined coefficient .0433

SEALING DEVICES.

Each gate will move in its niches on a live roller train, and there will be a play of ¼ of an inch both laterally and up stream. Under a head, a large amount of water would pass between the gate and the niches in which it moves, if some method of sealing the gate were not provided. At the bottom the gate, when closed, will rest upon babbit metal fixed to the sill, and at the top there will be a seal of rubber on the gate which will press tightly against the valve casing.

The side seals are a new device proposed by a designing engineer in the office of the Assistant Chief Engineer. They consist of a plate of 1/16 inch phosphor bronze 18 feet long fixed to each side of the gate with its free end bearing upon a guide in the valve casing. When the gate is moved up or down in opening or closing the valve the bronze seal moves with it. When the gate is down, and the valve, therefore, closed, the seals at bottom, top and sides meet and make the closure practically complete. The drawing herewith shows the position of the side sealing device upon the gate and its bearing upon the valve frame. There will be required 260 sealing devices, with a total of 29,340 pounds of rolled bronze spring straps, 67,210 pounds of cast bronze guides, and 11,670 pounds of bronze bolts and washers.



SECTION THROUGH GATE VALVE SHOWING METHOD OF ATTACHING BRONZE SEALING DEVICE. UPSTREAM SIDE IS TOWARD TOP OF PAGE.

The tests showed a maximum leakage under a 79-foot head for two valves of 1.82 cubic feet per second or 819 gallons a minute. Under operating conditions, when there will be a head of thirty feet, the leakage for a pair of valves will be about 0.8 of a cubic foot per second.

Misdirected Letters.

ANCON, C. Z., November 1, 1911.

The following insufficiently addressed letters originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Buchanan, Reuben
Byrne, Joseph A.
Cason, John B.
Cox, Clevis M.
De Caen, Mrs. Richard
Frederikson, Frederick F.
Gibson, Fred C.
Harajian, Horan
Holt, Max
Janis, William
King, Miss Bella
King, Harry (pkg.)
Little, J. A.
McFarlane, Simon R. W.
McGrath, Mrs. Bessie
Mezzone, Pasquale
Murray, James E.
Nelson, Elliott
Olmstead, Harry J.
Portugal, Ch. H.
Powell, Miss Lula
Rawley, Frank
Rigaces, Umberte
Roberts, Dr. C. W.
Schafer, M. Rex
Spooner, M.
Sulway, David
Turner, Miss Carrie
Watson, Simeon
Williams, John H

Band Concert

A band concert will be given by the Isthmian Canal Commission Band at Gatun, C. Z., on Sunday, November 5, 1911, at 5 p. m.

The next concert will be given at Gorgona, on November 12, at 6.00 p. m.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending November 8,1911 (75th meridian time):

DATE.	Low.	High.	Low.	High.
	A.M.	A.M.	P.M.	P.M.
November 2		6.15	12.25	6.35
November 3	12.45	7.05	1.15	7.25
November 4	1.30	7.50	2.00	8.10
November 5	2.15	8.35	2.45	8.50
November 6	3.00	9.15	3.25	9.35
November 7	3.38	10.00	4.05	10.15
November 8	4.20	10.40	4.50	11.00

LOCK MACHINES ERECTION.

Plant Required and Conditions of its Use.

New plant to the value of over forty thousand dollars will be required for the erection of lock operating machinery at Gatun, Pedro Miguel, and Miraflores, and a requisition for this plant, consisting of four locomotive cranes and four stiff leg derricks has been made on the Washington office. The specifications are so framed that manufacturers may offer cranes or derricks of standard makes conforming substantially to the requirements.

In the study of the conditions under which the operating machinery will be installed, the office of the Assistant Chief Engineer, under whom this work will be done, has determined that there will be required, besides the new plant mentioned above, four locomotive cranes now on the Isthmus, which will be transferred from other work. The amount of plant required is lessened by the fact that the erection at Miraflores will be approaching its summit point while that at Gatun will have passed that stage, and thus plant used at Gatun may be transferred to Miraflores. It is estimated that a total of 131,284 tons of material must be handled in the erection work, divided as follows:

ITEM.	Quantity.	Tons.
Machines, including chain fenders	536	13,616
Track, feet	97,854	8,117
Manhole covers	1,110	1,251
Electrical equipment		7,000
Steel work		1,300
Concrete, cubic yards	50,000	100,000
Total		131,284

The erection period is estimated as eighteen months from January 1, 1912. The greater portion of the machinery will be handled at least twice, in addition to handling in and out of storage. Assuming that one crane is the equivalent of two derricks, making the plant consist of ten working units, the following figures are an expression of the work to be performed:

Total tonnage handled by each crane	7,293	tons.
Average total per crane per month	729	tons.
Average total per crane per day	29	tons.
Average concrete per crane per month*	536	tons.
Average steel per crane per month	7.2	tons.
Average number of machines set per crane per month	1	

*The amount of concrete to be handled per month is small due to the delicate work and long waits inevitable in the setting of heavy machine parts.

In general the lock operating machinery is centralized in small groups at various parts of the locks; rendering the partial use of derricks feasible. At Gatun for instance there are ten of these groups in the center wall, and it will always be possible to handle four machines from one location, and frequently to serve six machines at one setting of a derrick. The machine pits are in the lock walls and all the handling will be done from the top of the walls. Owing to the bridges used in the miter gate erection, it has been decided to use derricks on the center walls, in preference to locomotive cranes. On the side walls, where the miter gate construction bridges do not interfere with free movement along the wall, locomotive cranes will be used.

Locomotive Cranes.—The locomotive cranes called for under the specifications must be capable of handling 8,000 pounds at a 40 foot radius (the horizontal distance between the centers of the hoisting hook and the crane center pin or post) when the outriggers are not in use; and 30,000 pounds at a 15-foot radius. They must operate on the 5-foot gage track, clear the rack in the center of the tracks, which requires 8 inches above the top of the traction rail, in the center, and elsewhere have a clearance of at least 6 inches, have a chain or gear drive for self propulsion along the track at the rate of five miles an hour when fully loaded, and be capable of self propulsion up a 3 per cent grade when heavily loaded. The engine must be double and provided with a locomotive link reversing motion or a reversible hoisting gear. The drum must be not less than 36 inches in diameter, drum friction not less than 42 inches, and the length if possible sufficient to take the whole line without an overlap. The hoisting line must be $\frac{7}{8}$-inch plow steel with hemp center, and so long that the load may be hooked on 70 feet below the top of the rails, with the boom at the minimum radius.

Stiff-leg Derricks.—The derricks will be of steel construction and of the common stiff-leg type, mounted upon skids or shoes in order that they may be moved with the minimum amount of work. They must be capable of lifting and swinging safely a maximum load of 22,000 pounds at a radius of forty feet. The boom must be 70 feet long from center of foot pin to center of out sheaves, and must have a swing of nearly three quadrants. The mast is to be of the minimum possible height, and will rotate upon ball and socket bearings. The bull wheel shall be not less than 12 nor more than 14 feet in diameter. The lines must be not less than $\frac{3}{4}$ inch diameter, of hemp center plow steel wire, and long enough to make a 70-foot lift.

Power will be supplied from a double engine and vertical boiler, which, with the hoisting drums and gear, will be mounted upon a cast iron or structural steel bedplate securely bolted to the base frame. There will be two drums, with one reversible drum swinging gear, equipped with friction clutches, ratchets, pawls, and operating levers complete. At least one of the drums must be equipped with a shaft extension and winch. The drums must be 16 inches in diameter and, if possible, of sufficient length to take the whole of the hoisting line without overlapping. An alternative bid is requested upon an electric hoist, the driving motor to operate upon a three-phase, 25 cycle, 220 volt, secondary circuit.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, October 28, 1911. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Oct. 22	127.3	93.6	47.0	15.6	15.2
Mon., Oct. 23	127.3	93.7	46.5	15.4	15.3
Tues., Oct. 24	131.7	96.8	52.0	16.1	15.6
Wed., Oct. 25	137.6	100.6	54.3	18.6	17.0
Thurs., Oct. 26	133.3	99.5	55.0	21.0	18.1
Fri., Oct. 27	127.3	93.7	47.3	18.6	18.1
Sat., Oct. 28	126.6	93.3	46.3	18.1	17.8
Height of low water	125.0	92.0	44.0		

OFFICIAL CIRCULARS.

Private Work by I. C. C. and P. R. R. Employes.

CULEBRA, C. Z, October 26, 1911.

CIRCULAR No. 417:

No employe of the Isthmian Canal Commission or Panama Railroad Company will perform work for any individual or company during the employe's regular working hours unless the performance of the work has been authorized by this office on Form C. E. 159 and the usual work order issued by the proper official, except that the Chief Quartermaster is authorized to approve the performance of work by employes of the Quartermaster's Department for employes of the Isthmian Canal Commission and the Panama Railroad Company when the total cost of the job does not exceed ten dollars.

Heads of divisions, departments and shops are authorized to permit employes of the Isthmian Canal Commission and the Panama Railroad Company to use machines, tools, etc., in the performance of private work for employes only, provided the work is not performed by the employe during his regular working hours, the machine and tools can be spared for such use, and the use of them for the purpose will not result in their being injured.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Ink on Pay Certificates.

EMPIRE, C. Z., October 26, 1911.

ALL DEPARTMENTS:

An ink called "Combined Copying and Writing Fluid" is now being furnished from the Mount Hope Storehouse which when used upon pay certificates is inclined to run, making the figures uncertain, which is particularly inconvenient when the brass check number is so affected and I have to request that this ink be not used in writing pay certificates and time vouchers. Only black writing fluid should be used for such purposes.

Respectfully,
W. M. WOOD,
Disbursing Officer.

Approved:
GEO. W. GOETHALS,
Chairman and Chief Engineer.

Sale of Panama Cafe Building.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., October 27, 1911.

Sealed proposals for the purchase of building located on lot north of Panama passenger station, and known as "Panama Railroad Cafe" building, will be received in this office until 3.00 p. m., November 20, and then opened.

Bids must be made for the building as it stands on the ground, the successful bidder to remove the building within thirty days' time after notified that bid has been accepted.

Proposals should be accompanied by certified check, Post Office money order, or cash, for 5 per cent of the amount of bid, which will be returned to unsuccessful bidders.

The successful bidder will be given a freight rate of $2.25 per ton in case it is desired to ship the material to any point along the line.

Envelopes containing bids should be endorsed: "Proposal for purchase of "Panama Railroad Cafe Building," and addressed to

J. A. SMITH,
General Superintendent,
Panama Railroad Company.

Rainfall from October 1 to 28, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section	*Ins.*		*Ins.*
Ancon	4.47	9	9.47
Balboa	2.58	9	7.34
*Miraflores	2.00	18	8.29
Pedro Miguel	1.93	24	11.19
Rio Grande	2.34	5	13.83
Central Section.			
Culebra	2.64	1	14.40
*Camacho	2.91	1	16.36
Empire	2.15	1	13.19
Gamboa	1.76	21	11.37
*Juan Mina	2.03	21	10.48
Alhajuela	1.78	24	11.63
*El Vigia	1.68	24	13.27
*Gorgona	3.07	24	11.56
San Pablo	1.86	24	7.06
Tabernilla	2.41	24	9.12
Bohio	1.41	3	9.63
*Monte Lirio	2.09	6	10.70
Atlantic Section—			
Gatun	2.42	24	13.33
*Brazos Brook	1.67	13	9.72
Colon	2.73	24	12.94
Porto Bello	2.67	2	10.69
*Nombre de Dios	1.30	12	5.66

SOCIAL LIFE OF THE ZONE.

Work of Various Organizations.

There will be a meeting of the executive board of the Canal Zone Federation of Women's Clubs at the Commission clubhouse, Empire, on Monday afternoon, November 6, at 2.30 o'clock.

Meetings of the Gatun Woman's Club were resumed in October. There will be two meetings in each month. On the second Thursday the meeting will be devoted to the business of the club, and on the fourth Thursday there will be a social meeting with a program under the social and literary committee. The club will hold a social evening for their friends in December.

Meetings of the Paraiso Woman's Club for the months of November and December will be as follows: On Wednesday, November 1 and 15, there will be business meetings with a program and on December 6 and 20, meetings with programs. At the meeting on October 18, the subject of woman suffrage was discussed.

On November 8, the home department of the Cristobal Woman's Club will have as its program the discussion of home life in Switzerland.

The Little Workers, a sewing club composed of young girls, was organized at Gorgona on Friday, October 20. The purpose of the club is to teach the members plain sewing, button hole making, and embroidery, and to promote a social feeling among the young girls of the village. The meetings will be held weekly on Saturdays at the homes of the members. The officers are, Jane Calvit, president; Mary Halligan, vice-president, and Anna Cody, secretary.

Charity Ball at Cristobal.

The annual charity ball of the Cristobal Woman's Club will be held at the Commission clubhouse on Thursday evening, November 2. The receipts will be devoted toward defraying the expenses of the anti-tuberculosis work that is being carried on under the auspices of the club in the city of Colon.

Church Notes.

The Culebra Christian League held a "social" and entertainment at the Commission chapel on Thursday evening, October 26. There was a program consisting of musical selections and recitations. This is the first entertainment that has been given by the league since August. It is the intention to hold a monthly entertainment in order to keep up social interest among the members of the organization.

On Sunday, November 12, the Isthmian Sunday School Association will hold a convention in the chapel at Gorgona, beginning at 2.15 p. m. The speakers will be Commissioner Maurice H. Thatcher, who will deliver an address on Sunday school work, Judge Thomas E. Brown, who will speak on the value of Bible study, and the Rev. Aquila Lucas, who will lead a discussion of practical work in the Sunday school and teachers' problems. Officers and teachers in all of the Sunday Schools are urgently invited to be present, and others interested in the work will be welcomed.

The corporate communion of the Woman's Altar Guild of St. Luke's Church, Ancon, will be held on November 1, at 9 a. m. The annual meeting, with election of officers, will be held at the Hotel Tivoli on Tuesday, November 7, at 3.30 p. m.

The Ladies Aid Society of the Methodist Episcopal Church will hold its annual bazar at Ancon hall on November 17. There will be booths containing fancy articles, cakes, candies and ice cream.

The bazar is given in aid of the work of the society. The sale will be open both afternoon and evening.

Two Sunday schools have been organized at Balboa and at East Balboa by representatives of the Methodist Episcopal Church. At old Balboa the school is held in the mess hall at 2 p. m. and has an enrollment of 25 and one teacher. The East Balboa school meets in the hotel at 3 p. m. There are 25 pupils and several teachers.

The woman's altar guild of Christ Church, Colon, held a musical and tea at the clubhouse on Saturday afternoon, October 28. The receipts, which amounted to nearly $100, will be used to meet the deficit in the church expenses. The program given was as follows: Piano solo, prelude, Rach Manieff, Miss Dorothy Leyland; baritone solo, (*a*) Thora, Stephen Adams, (*b*) A Rose In Heaven, selected, Mr. R. Mosher; violin solo, (*a*) Les Audeaux, Pable de Sarneate, (*b*) Seranade, Par R. Drige, Dr. Eugene Hill; contralto solo, (*a*) Violets, Ray Remaine, (*b*) Ma Curly Headed Baby, selected, Miss Bessie M. Sweeney; tenor solo, (*a*) Pagliacci, R. Leonaccalle (*b*) No e Ver, Sito Mattei, Arture Petrozzoni; piano solo, Polanaise, Chopin, Miss Dorothy Leyland; baritone solo, (*a*) If You Were There, Frank L. Prince, (*b*) Asthore, H. Tretere, William Bennyhoff.

Order of the Eastern Star.

On Wednesday, October 25, Orchid Chapter, No. 1, Order of the Eastern Star was organized in the lodge hall at Gorgona. The Rev. Willis D. Engle, of Indianapolis, Worthy Grand Patron of the General Grand Chapter of the order, performed the rites of institution, assisted by Past Grand Worthy Matron, Mrs. Rosetta Brown. There were 73 charter members. The meeting was in two sessions beginning at 2.30 p. m. with a recess at 5 o'clock. The evening session closed with a reception. The officers installed were as follows. Worthy Matron, Mrs. Annie L. Calvit; Worthy Patron, Washington van Arsdale; Associate Matron, Mrs. Jennie Jones; Secretary, Mrs. Katherine Casey; Treasurer, Mrs. Agnes Fahr; Conductress, Mrs. Minnie Kosier; Associate Conductress, Mrs. Agnes McCombs; Chaplain, Mrs. Eleanor Babbitt; Marshall, Mrs. Martha Wilson; Organist, Mrs. Ada Shady. The five points of the star are represented by Mrs. Ceporiah Bain, Mrs. May Jarvis, Mrs. Emma Fahr, Mrs. Anna Lucachese, and Mrs. Emma Wilson. Mrs. Lily M. Houston is the warder and Stephen E. Calvit is the sentinel. The new chapter will hold meetings on the second Wednesday evening in each month at 7.30 o'clock and on the fourth Wednesday afternoon in each month at 3 o'clock.

M. J. McCarty, an American formerly in the Canal employ, and latterly employed by the Panaman Government in well drilling in the interior of the Republic, shot himself through the head on Saturday night, October 28, while on his way from Pedro Miguel to Paraiso. He was about 40 years of age and had lived on the isthmus since the beginning of the American occupation.

PERSONAL.

Lieut.-Col. W. L. Sibert sailed on the *Ancon* on October 31, for the States, on leave.

Among the passengers on the *Panama*, which arrived on October 30, were, Lieut.-Col. C. A. Devol, with Mrs. Devol, Mr. S. B. Williamson, Mr. C. M. Saville with Mrs. Saville and Mr. E. J. Williams.

The Hon. H. Percival Dodge, accompanied by Mrs. Dodge and their daughter, arrived from France on October 29, to take up his duties as American Minister to Panama. They are at present at the Hotel Tivoli.

The party of Senators, who arrived on the Isthmus on the *Ancon* on October 21, spent several days in going over the line of the Canal inspecting various phases of the work, and devoted the closing days of their visit to hearings at the Hotel Tivoli. All the members of the party with the exception of Senators Wetmore and Thornton returned on the *Ancon*, leaving the Isthmus on October 31. Senator Wetmore has been ill at Ancon Hospital during the entire visit and will not be able to travel for several days. Senator Thornton will return to New Orleans on the United Fruit Company ship on November 2.

Missing Man.

Any one having information regarding the whereabouts of Oskar Fischer (Oscar Fisher), who is supposed to be on the Isthmus of Panama, is requested to communicate with THE CANAL RECORD.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, November 8, 1911. All applicants for license as chauffeurs must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m. on November 8, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

Ancon Crusher.

A statement of rock crushed at the Ancon quarry during the week ending October 27, follows:

DATE.	Hours worked.	Cubic Yards.
October 23	6.50	2,293
October 24	7.05	2,523
October 25	*	400
October 26	7.05	2,344
October 27	9.00	3,200
Total	38.00	10,760

*Crusher shut down, putting new shaft in No. 12 crusher.

The Knights of Pythias of Gatun will take a sightseeing trip over the relocation of the Panama railroad, between Gatun and Gamboa, through Culebra Cut, over the Pacific Division work, and out upon the Naos Island breakwater on November 3.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The standing of the teams of the Isthiman Basket Ball League on October 28, was as follows:

Cristobal...........	4	0	1.000
Gorgona...........	3	1	.750
Gatun.............	3	1	.750
Culebra............	2	2	.500
Empire............	0	4	.000
Corozal............	0	4	.000

The result of basket ball games played on October 28, were as follows: Cristobal, 25, Corozal, 10; Gorgona, 23, Culebra, 11; Gatun, 20, Empire, 15. Games to be played November 4, are: Empire at Cristobal; Gatun at Culebra.

COROZAL.

Dr. Connor, Acting Health Officer of Panama, gave an informal lecture Wednesday evening on the subject "Tuberculosis." A general discussion followed the lecture.

The pool tournament closed with Mr. Baker winning the cue. Messrs. Norenberg and Jones tied for second place. A handicap tournament will be started in the near future. Those desiring to enter should hand their names to Manager Wilson.

CULEBRA.

The following are the results of the league bowling games for the week:

Culebra				Empire.			
Mitchell...	134	142	166	Gus.......	189	140	165
Herrington.	204	170	143	Gorham...	144	162	198
Driscoll....	162	159	140	Pearson....	170	169	199
Case........	182	171	232	Huson.....	149	159	169
Dougherty.	171	215	180	Spinehr....	132	162	171
Totals	853	857	861		784	792	902

The following are the names of the men that played the volley ball game between the Chief Engineers, and the Union Christian League:

League.	Chief Engineers.
Warner	Flieschman
Kramer	Coppin
Herrington	Baume
Vanzandt	Stillwell
Wilmont	Kaufman
Hoffmann	Barcroft

The score was 3 to 1 in favor of the Chief Engineers.

The following is the program that was given Sunday evening by the choruses of Corozal and Culebra:

Introduction, Orchestra; song, Holy, Holy, Holy, Congregation; Bible reading and prayer, the Rev. A. A. Nellis; solo, Penitent, Van de Water, Mrs. G. R. D. Kramer; Unfold ye Portals (Redemption), Gounod, chorus; Address, the Rev. A. A. Nellis; duet, Silent Night, Mr. and Mrs. Kramer; Holy art Thou (Largo), Xerxes, Chorus; Ninety and Nine, Campion, Mrs. Boyd; The Heavens are Telling, Creation, Chorus; My Country 'Tis of Thee, Congregation. Besides those mentioned, fourteen others took part.

EMPIRE.

The following high scores were bowled on the Empire alleys during the past week: Duckpins—Dakin, 105; Rodeigherio, 119, 104; Grund, 101; Tenpins—Parkis, 215; Spinks, 208; Huson, 211.

Empire took three straight games from the Culebra team on Saturday night, October 28, on the Empire alleys, by the following scores:

Empire.				Culebra.			
Pinney......	171	158	157	Conlan....	138	158	143
Giavolli....	169	163	193	Judge.....	138	103	118
Anderson...	131		130	Sgolham...	168	142	120
Davis......	196	146	175	Fay.......	174	136	154
Parkis.....	173	142	145	Baumer....	177	130	127
Snyder......		155					
Total	840	764	800		795	669	664

On Tuesday night, October 31, Dr. Conner, Acting Health Officer of Panama, gave a lecture on "Tuberculosis" under the auspices of the Literary and Debating Society.

GORGONA.

The Social Study Club was organized on Friday at 7:30, there being twenty-two persons present. The subjects discussed were, "The Works of the World;" Christ's Valuation of Life;" and "Increasing number of Accidents." The class will meet every Friday evening at 7:30, and all are invited to attend.

The Cristobal bowlers took two out of three games from the local team on Gorgona's alleys on Saturday night, the scores being as follows:

Cristobal				Gorgona.			
Barrett....	206	144	174	Roper.....	182	168	171
Herring....	201	137	185	Hutter....	180	158	212
Wheeler.....	159	187	179	R. Van.....	184	139	147
Rosteik.....	150	155	179	Sexton.....	147	183	151
Burns......	172	143	170	Haggerty..	171	155	144
Totals	888	766	887		864	803	825

About one hundred and forty people attended the weekly song service last Sunday evening. Mrs. Shady played the piano, Mr. E. Reinhold the violin and Mr. J. T. Hopkins the cornet. Sunday evening November 5 the weekly song service will be held at 7.00 preceded by moving pictures portraying the Bible scene "Christ and the Woman at the Well."

The physical department has made arrangements to give massage in the locker room on Tuesday and Friday evenings.

Tennis is being played in the gymnasium from 5.00 to 7.00 o'clock on all evenings when it does not interfere with other arrangements. All members are eligible to participate.

GATUN.

Gatun won all the three games of bowling from Camp Elliott on Saturday evening, October 28. The scores are as follows:

Gatun.				Camp Elliott.			
Omeara....	121	129	182	Weigely...	169	140	127
Chamber'n.	130	172	171	Kribel....	148	131	155
DeMoll....	196	181	176	Janke.....	131	142	168
Galloway..	155	203	173	McDowell.	133	150	147
Barte.....	191	192	176	Clause....	210	154	152
Total....	793	877	828		791	717	749

The initial meeting of the discussion club was held on Sunday evening October 29. The subject was "Employers' Liability." The club will meet every Sunday evening from 6 to 7 o'clock.

Dr. Connor will give a lecture at the clubhouse on Wednesday evening November 29, on "Tuberculosis."

A class for the study of Spanish by the conversational and objective method will be formed at the Gatun clubhouse in the near future. Senor Jose Gomez, formerly a student at the Institute of Seville in Spain and of the University of Havana will be the leader. A charge of twenty-five cents per lesson will be made. It has not yet been decided how long the course will run. No text books will be required. If there is a sufficient number of women in Gatun who care to study Spanish a class will be formed exclusively for women.

A hand ball tournament will be started on November 9.

CRISTOBAL.

On Wednesday night October 25, L. A. Mason gave an address on the Installation and Operation of Lock Machinery.

Senators Bristow and Cummins addressed the Debating Club on the evening of Monday, October 30.

On Wednesday November 8, at the Literary and Debating Club an address, "The Immortal Abraham Lincoln," will be given by W. F. Morrison.

The Discussion Club will be lead on November 6, by W. H. Warr secretary at Empire.

The Cristobal bowling team won two out of three games from Gorgona on the local alleys on Saturday night by the following scores:

Gorgona.				Cristobal.			
Arnold....	153	141	131	Gibson....	150	157	110
Sims.......	216	167	131	Blackburn.	173	187	148
Lowe......	141	152	120	Collins....	144	188	207
Orr J......	165	184	155	Bullard...	175	190	187
Van M....	161	130	171	Louch.....	171	234	169
Total....	836	774	711		813	956	821

On Friday November 3, in the afternoon and evening there will be a local duck pin tournament for the individual championship of Cristobal. An entrance fee of 50 cents will be charged. All entries must be made before the day of the tournament. Messrs. Smith, Herrington and Weston are the committee in charge of the tournament and all entries are to be made to one of them.

The following high scores were made in Duck pins during the week ending October 28: Louch, 114, 105 108, 116; Poore, 101; Vanderberg, 100; Marquez, 112, E. Orr, 104, 106, 101; Wheeler, 120; Herring, 109, 104; Smith, 105, 105; Weston, 117, 101; Howard, 100.

PANAMA RAILROAD COMPANY.

PASSENGER TRAIN TIME TABLE No. 10—IN EFFECT JULY 24, 1911.

SOUTHWARD.										Miles from Colon.	STATIONS.	NORTHWARD.										
SUN. ONLY.*	SAT. ONLY	SUNDAY ONLY.					DAILY EXCEPT SUNDAY.					DAILY EXCEPT SUNDAY				SUNDAY ONLY.						SUNDAY
73	71	29	27	25	23	21	7	5	3			2	4	6	8	20	2	24	26	28	30	74
A. M.	P. M.	P. M.	P. M	P. M.	A. M.	A. M.	P. M.	A. M	A. M.		Leave. Arr.	A. M.	P. M.	P. M.	P. M	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.
12.30	6.00	7.00	4.00	1.00	10.00	6.45	4.35	10.30	5 20	0.00	‡Colon..........	8.50	1.00	3.45	7.45	9.00	12.15	3.15	6.15	9. 5	11.55	2 05
12.35	s 6.05	s 7.05	s 4.05	s 1.05	s 10.05	s 6.50	f 4.40	f 10.33	f 5.25	1 77	‡Mt Hope ...	s 8.47	f 12.57	f 3.43	f 7.42	s 8.57	s 12.12	s 3.12	s 6.12	s 9.12	s 11.52	s 2.03
12.45	6.10	f 7.10	4.10	1.10	f 10.10	6.55	4.45	1 .38	s 5.31	4.37	†Mindi	s 8.41	f 12.51	f 3.38	f 7.36	f 8.51	12.06	3 06	6.06	9.06	f 11.46	1.57
	6.15	f 7.16	f 4.16	f 1.16	f 10.16	f 7.01	f 4 50	f 10.43	f 5.36	5.94	New Gatun..	s 8.35	f 12.45	f 3.32	f 7.30	s 8.46	f 12.01	f 3.01	f 6 01	f 9.01	f 11.41	1.52
																	P. M					
s12.58	s 6 18	s 7.20	s 4.20	s 1.20	s 10.20	s 7.05	s 4.53	s 10.47	s 5.41	6.79	‡Gatun.........	s 8.31	s 12.41	s 3.29	s 7.26	s 8 41	s 11.56	s 2.56	s 5 56	s 8.56	s 11.37	s 1 50
1.23	f 6.41	s 7.44	f 4.44	f 1.44	f 10.41	f 7.29	f 5.16	f 11.11	f 6.05	15 26	‡Bohio	s 8 06	f 12.16	f 3.04	s 7.01	s 8.16	s 11.31	s 2.31	s 5.31	s 8.31	f 11. 6	f 1.25
1 32	f 6 47	s 7 51	s 4 51	s 1.51	s 10.51	f 7.36	f 5 22	f 11.18	f 6.12	18 51	Frijoles......	s 7.59	s 12.09	f 2 57	s 6.54	s 8.09	s 11.24	s 2.24	s 5.24	s 8.24	s 11.10	f 1.18
s 1.42	s 6.53	s 7.58	s 4.58	s 1 58	s 10.58	s 7.43	s 5.28	s 11.25	s 6.19	21.37	‡Tabernilla....	s 7.52	s 12.02	s 2.50	s 6.48	s 8 03	s 11.18	s 2.15	s 5.18	s 8.18	s 11.04	s 1 11
													P. M.									
1.49	s 6.57	s 8.03	s 5.03	s 2.03	s 11 03	s 7.48	s 5.32	s 11.29	s 6.23	23 30	‡San Pablo....	s 7.46	s 11.56	s 2.44	s 6.41	s 7.58	s 11.13	s 2.13	s 5 13	s 8.13	s 10.59	s 1 05
1.55	f 7.03	f 8.09	f 5.09	f 2.09	f 11.09	f 7.54	f 5.38	f 11 35	f 6.30	25 74	‡Mamei	f 7.40	f 11.50	f 2.38	f 6.35	f 7.52	f 11.07	f 2 07	f 5 07	f 8.07	f 10.53	f 12 59
s 2 08	s 7 11	s 8.15	s 5.15	s 2.15	s 11.15	s 8.00	s 5.46	s 11.44	s 6 38	28.27	‡Gorgona	s 7 32	s 11.42	s 2.31	s 6.27	s 7.46	s 11.01	s 2.01	s 5.01	s 8 01	s 10 47	s 12.53
s 2.15	s 7.16	s 8.20	s 5.20	s 2.20	s 11.20	s 8.05	s 5.51	s 11.49	s 6 43	29 68	‡Matachin ...	s 7.26	s 11.36	s 2.25	s 6.21	s 7 40	s 10.55	s 1.55	s 4 55	s 7 55	s 10 42	s 12.47
s 2 21	s 7.20	s 8.25	s 5.25	s 2.25	s 11.25	s 8 10	s 5.55	s 11.55	s 6.48	31.01	‡Bas Obispo...	s 7.22	s 11 32	s 2.21	s 6.17	s 7 35	s 10 50	s 1.50	s 4 50	s 7 50	f 1[illegible]6	s 12 42
								P. M.														
s 2.35	s 7.26	s 8.31	s 5.31	s 2.31	s 11.31	s 8.16	s 6.01	s 12.02	s 6.55	32.62	Las Cascadas	s 7.16	s 11.26	s 2.15	s 6.11	s 7.29	s 10.44	s 1.44	s 4 44	s 7.44	s 10.[illegible]	s 12.37
s 2.45	s 7.32	s 8.37	s 5.37	s 2.37	s 11.37	s 8.22	s 6.07	s 12.09	s 7.02	34.91	†Empire......	s 7.11	s 11.21	s 2.10	s 6.06	s 7.23	s 10.38	s 1.38	s 4 38	s 7 38	s 10.24	s 12.31
s 2.53	s 7.38	s 8.43	s 5.43	s 2.43	s 11.43	s 8.28	s 6.13	s 12.15	s 7.08	35.90	†Culebra	s 7.05	s 11.15	s 2.04	s 6.00	s 7 17	s 10.32	s 1.32	s 4.32	s 7 3[illegible]	s 10.18	s 12 25
s 3.03	s 7.48	f 8.52	f 5.52	f 2.52	f 11 52	f 8.37	6.23	12 25	7.18	39 77	†Paraiso Jct ..	6.52	11.02	1 51	5.47	f 7 06	f 10.21	f 1 21	f 4.21	f 7 21	f 10.[illegible]	f 1 .12
s 3.12	s 7.50	s 8.54	s 5.54	s 2.54	s 11.54	s 8.39	s 6.25	s 12 27	s 7.20	40.15	†Pedro Miguel	s 6.51	s 11.00	s 1.50	s 5.45	s 7 04	s 10.19	s 1.19	s 4 19	s 7.19	s 10.[illegible]	s 12.10
	s 7.56	s 8.59	s 5.59	s 2.59	s 11.59	s 8.44	s 6.31	s 12.32	s 7.26	41 66	Miraflores....	s 6.44	s 10.54	s 1.44	s 5.39	s 6.59	s 10.14	s 1.14	s 4.11	s 7.14	s 9.55	s 12.04
					P. M																	A. M
s 3.25	s 8.04	s 9.07	s 6.07	s 3.07	s 12.07	s 8 52	s 6.39	s 12.39	s 7.33	44.16	‡Corozal	s 6.37	s 10.47	s 1.37	s 5.32	s 6.52	s 10.07	s 1 07	s 4.07	s 7.07	s 9.48	s †11.57
	f 8.06	f 9.09	f 6 09	f 3.09	f 12 09	f 8.54	f 6 41	f 12.41	f 7.35	44.54	Camp Diablo	s 6.35	f 10 45	f 1.35	f 5.30	f 6.50	f 10.05	f 1.05	f 4.05	f 7 05	f [illegible]	s †11.55
3.30	8.10	9.15	6.15	3.15	12.15	9.00	6.45	12.45	7 40	47.07	†Panama	6 30	10.40	1.30	5 25	6.45	10.00	1.00	4.00	7 [illegible]	9 4[illegible]	†11 50
A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	P M.	P. M.	A M.		Arr. Leave	A. M.	A. M.	P. M	P. M.	A. M.	A. M.	P. M	P. M.	P. M	P. M	P. M.
73	71	29	27	25	23	21	7	5	3		‡Tel. station. f Flag station. s stop.	2	4	6	8	20	22	24	26	28	30	74

---

* No. 73 is a mixed train, carrying one or two first class coaches.

† Saturday night.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning November 1, 1911.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	20
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24
MISCELLANEOUS.	
Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Veal, per pound	1.20
Beef, per pound	25
Eggs, fresh, dozen	32
one-half dozen only	17
Bluefish, fresh, per pound	14
Halibut, fresh, per pound	15
Shads, fresh, each	70
Oysters, 1 qt. kegs, per keg	50
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each 60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.00
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	†28
Squabs, each	35
Capons, each	2.10
Fryers, corn fed, each	60
Partridges, each	50
Grouse, each	50
CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30
DAIRY PRODUCTS.	
Butter—Creamery special, per pound	35
Cheese—Roquefort, per pound	38
Philadelphia cream, cake	10
Philadelphia cream, cake	18
Young America, per pound	20
Swiss, per pound	26
Edam, each	1.00
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**25
Buttermilk, bottle	**15
Fer-mil-lac, bottle	**25
Ice cream, quart	‡25
½-gallon	‡50
VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	6
Cabbage, per pound	4
Cucumbers, per pound	†6
Carrots, per pound	3
Cauliflower, per pound	7
Egg Plant, per pound	10
Lettuce, per pound	12
Onions, per pound	3½
Peppers, green, per pound	10
Potatoes, sweet American, per pound	3
Potatoes, white, per pound	3
sweet, per pound	2
Pears, alligator, each	6
Parsnips, per pound	4
Parsley, per pound	10
Squash, per pound	3
Turnips, per pound	3
Tomatoes, per pound	6
Yams, per pound	3
Apples, per pound	5
Cantaloupes, each	10
Grape Fruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12
Peaches, pound	10
Plums, per pound	10
Pears, per pound	6

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrrived at the ports of Cristobal, Colon, and Balboa, during the week ending October 28:

Prinz Eitel Friedrich, October 22, from New York, with 3 cases of hardware, for stock.

Atrato, October 22, from New York, with 11 cases of shipping tags, for stock.

Santona, October 23, from Baltimore, with 135 bundles of valve material, 26 pieces of valve material, 10 cases of valve material, 2,692 pieces of steel ties, 2,543 pieces of steel bars for Pacific Division: and 92 bundles of valve material, 18 pieces of valve material, 37 cases of valve material, 1,687 pieces of steel ties, 64 bundles of railway rack material for Atlantic Division; 4,330 pieces of steel plates, 214 kegs of rivets, for Panama Railroad Company; 798 pieces of lumber for Mechanical Division; 4,500 bundles of splice bars, 300 pieces of steel plates, 300 kegs of railroad spikes, 1,110 kegs of wire nails, 10 cases of paint and 8 barrels of paint, for stock

Ailsawald, October 25, from Baltimore, with 16,750 cases of dynamite, 200 bundles of brooms and 3,000 bundles of tie plates for stock; 157 pieces of couplers and 400 car wheels for Mechanical Division; 4,583 pieces of steel rail for Panama Railroad Company.

Trebia, October 25, from New York, with 114,320 bags of cement for the Atlantic and Pacific Divisions and 10 cases of benzine for stock.

Advance, October 25, from New York with 5 cases of steel plant material for the Mechanical Division; 8 cases of filter plant material and 8 pieces of steel channels for the Atlantic Division; 13 life preservers, 25 bundles of scoop shovels, 75 cases of caustic soda, 13 cases of deck brushes, 13 cases of insulated wire, 8 bundles of steel wire, 15 cases of stove parts, 9 cases of oil pumps, 300 cases of washing powder, 50 crates of refrigerators, 14 cases of toe calks, 10 cases of blasting batteries for stock, and 36 pieces of steel beams for the Panama Railroad Company, and a miscellaneous cargo, the whole consisting of 673 packages, weighing 120 tons.

Parismina, October 26, from New Orleans, with 167 bundles of packing cases for the Sanitary Department, 134 pieces of creosoted piling for the Atlantic Division, 1,000 kegs of white lead, 50 crates of paste, 63 bundles of shingles, 25 pieces of piling, 1,215 bales of straw, 13,536 pieces of lumber and 7 cases of cotters for stock.

Almirante, October 26, from New York, with 1,060 pails of grease, 9 cases of hose and 800 drums of oil for stock, and 6 pieces of steel girders for the Atlantic Division.

Pleiades, October 27, from San Francisco with 89 pieces redwood lumber for the Mechanical Division.

FOUND—At Corozal, an open face filled case watch. It can be obtained by calling and identifying property at House 140, Room 24, Paraiso.

There will be a baseball game between picked teams from Gorgona and Cristobal on the Lincoln House grounds, Colon, Friday morning, November 3, at 10 o'clock.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.			
Allianca	P. R. R.	Monday	Oct. 30
Colon	P. R. R.	Monday	Nov. 6
Advance	P. R. R.	Saturday	Nov. 11
Panama	P. R. R.	Saturday	Nov. 18
Allianca	P. R. R.	Friday	Nov. 24
Colon	P. R. R.	Friday	Dec. 1
Advance	P. R. R.	Thursday	Dec. 7
Panama	P. R. R.	Thursday	Dec. 14
Allianca	P. R. R.	Wednesday	Dec. 20
Colon	P. R. R.	Wednesday	Dec. 27
Advance	P. R. R.	Tuesday	Jan. 2
Panama	P. R. R.	Tuesday	Jan. 9
Allianca	P. R. R.	Monday	Jan. 15
Colon	P. R. R.	Monday	Jan. 22
Advance	P. R. R.	Saturday	Jan. 27
Panama	P. R. R.	Saturday	Feb. 3
Allianca	P. R. R.	Friday	Feb. 9
Colon	P. R. R.	Friday	Feb. 16
Advance	P. R. R.	Friday	Feb. 23
CRISTOBAL TO NEW YORK.			
Panama	P. R. R.	Sunday	Nov. 5
Allianca	P. R. R.	Saturday	Nov. 11
Colon	P. R. R.	Saturday	Nov. 18
Advance	P. R. R.	Friday	Nov. 24
Panama	P. R. R.	Friday	Dec. 1
Allianca	P. R. R.	Thursday	Dec. 7
Colon	P. R. R.	Wednesday	Dec. 13
Advance	P. R. R.	Wednesday	Dec. 20
Panama	P. R. R.	Wednesday	Dec. 27
Allianca	P. R. R.	Tuesday	Jan. 2
Colon	P. R. R.	Tuesday	Jan. 9
Advance	P. R. R.	Monday	Jan. 15
Panama	P. R. R.	Sunday	Jan. 21
Allianca	P. R. R.	Sunday	Jan. 28
Colon	P. R. R.	Saturday	Feb. 3
Advance	P. R. R.	Friday	Feb. 9
Panama	P. R. R.	Friday	Feb. 16
Allianca	P. R. R.	Thursday	Feb. 22
NEW YORK TO COLON.			
Santa Marta	U. F. C.	Thursday	Oct. 26
Prinz Sigismund	H.-A.	Friday	Oct. 27
Thames	R. M.	Saturday	Oct. 28
Metapan	U. F. C.	Thursday	Nov. 2
Prinz August Wilhelm	H.-A.	Saturday	Nov. 4
Zacapa	U. F. C.	Thursday	Nov. 9
Prinz Eitel Friedrich	H.-A.	Friday	Nov. 10
Trent	R. M.	Saturday	Nov. 11
Almirante	U. F. C.	Thursday	Nov. 16
Prinz Joachim	H.-A.	Saturday	Nov. 18
Santa Marta	U. F. C.	Thursday	Nov. 23
Prinz Sigismund	H.-A.	Friday	Nov. 24
Oruba	R. M.	Saturday	Nov. 25
Metapan	U. F. C.	Thursday	Nov. 30
Prinz August Wilhelm	H.-A.	Saturday	Dec. 2
Zacapa	U. F. C.	Thursday	Dec. 7
Prinz Eitel Friedrich	H.-A.	Friday	Dec 8
Magdalena	R. M.	Saturday	Dec. 9
Almirante	U. F. C.	Thursday	Dec. 14
Prinz Joachim	H.-A.	Saturday	Dec. 16
Santa Marta	U. F. C.	Thursday	Dec. 21
Prinz Sigismund	H.-A.	Friday	Dec. 22
COLON TO NEW YORK.			
Almirante	U. F. C.	Thursday	Nov. 2
Prinz August Wilhelm	H.-A.	Tuesday	Nov. 7
Prinz Sigismund	H.-A.	Saturday	Nov. 11
Oruba	R. M.	Tuesday	Nov. 14
Metapan	U. F. C.	Thursday	Nov. 16
Prinz August Wilhelm	H.-A.	Tuesday	Nov. 21
Zacapa	U. F. C.	Thursday	Nov. 23
Prinz Eitel Friedrich	H.-A.	Saturday	Nov. 25
Magdalena	R. M.	Tuesday	Nov. 28
Almirante	U. F. C.	Thursday	Nov. 30
Prinz Joachim	H.-A.	Tuesday	Dec. 5
Santa Marta	U. F. C.	Thursday	Dec. 7
Prinz Sigismund	H.-A.	Saturday	Dec. 9
Clyde	R. M.	Tuesday	Dec. 12
Metapan	U. F. C.	Thursday	Dec. 14
Prinz August Wilhelm	H.-A.	Tuesday	Dec. 19
Zacapa	U. F. C.	Thursday	Dec. 21
NEW ORLEANS TO COLON.			
Cartago	U. F. C.	Wednesday	Oct. 25
Atenas	U. F. C.	Saturday	Oct. 28
Turrialba	U. F. C.	Saturday	Nov. 4
Heredia	U. F. C.	Wednesday	Nov. 4
Abangarez	U. F. C.	Saturday	Nov. 11
Cartago	U. F. C.	Wednesday	Nov. 15
COLON TO NEW ORLEANS.			
Cartago	U. F. C.	Thursday	Nov. 2
Abangarez	U. F. C.	Thursday	Nov. 2
Tivives	U. F. C.	Thursday	Nov. 9
Atenas	U. F. C.	Thursday	Nov. 9

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, NOVEMBER 8, 1911. No. 11.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Switchback Utilization at Gatun

In order to lift the trains bearing spoil from Culebra Cut to the top of the west wing of Gatun Dam, a switchback has been built on the lower side, from the spillway, running beyond the extreme western end of the dam on a grade of 1 per cent. Near the far end is a switch, on which the trains run back in the final climb to the place of dumping. Steamshovel 116 is borrowing material from the hills beyond the end of the dam and it advances upward on a 1 per cent grade, clearing a way for the continuance of the switchback. Thus the height of the latter rises as the dam goes up, and the switch of the dump track is carried steadily further out and up, in order to preserve the low grade. This arrangement for an easy grade on tracks from a borrow pit which by the nature of its location and making is at a convenient altitude, is effecting a considerable saving of time and expense. Trains of 15 dump cars of 10 cubic yards capacity are hauled from the borrow pit to the top of the dam by a locomotive of the 200 type; and trains from Culebra Cut, consisting of 35 cars of 10 yards each, or 27 cars of 17 yards capacity, are able, with the assistance of a pusher engine, to run intact to all the high level dumps, making up to three switchbacks to accomplish this purpose.

Canal Work in October.

The grand total of Canal excavation to November 1 was 153,055,640 cubic yards, leaving to be excavated 42,267,739 cubic yards, or less than one-fourth of the entire amount for the completed Canal.

The total for October was 2,331,678 cubic yards, as compared with 2,884,382 cubic yards in October, 1910, and 2,827,798 cubic yards in October, 1909.

The dry excavation amounted to 1,516,759 cubic yards, and was principally by steam shovels. The dredges removed 810,215 cubic yards, and 4,704 cubic yards were sluiced in the Central Division, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 536,431 cubic yards. Of this total, 66,031 cubic yards were dry excavation, and the remainder was removed by the dredges in the Atlantic entrance.

The total excavation in the Central Division was 1,319,187 cubic yards, all of which was from the prism. The amount taken from Culebra Cut was 1,306,971 cubic yards, as compared with 1,320,314 cubic yards in October, 1910, the high record for that month.

In the Pacific Division, the total excavation was 476,060 cubic yards, 339,815 cubic yards of which were taken out by dredging at the Pacific entrance.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

LOCALITY.	"Work." Excavation.	"Plant." Excavation.	Total excavation.
ATLANTIC DIVISION.			
Dry excavation—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Locks, Dam and Spillway	112	....	112
Mindi	65,919	....	65,919
Total	66,031	....	66,031
Wet excavation—			
Atlantic entrance	470,400	....	470,400
Locks, Dam and Spillway	....	....	....
Total	470,400	....	470,400
Total wet and dry excavation	536,431	....	536,431
CENTRAL DIVISION.			
Dry excavation—			
Culebra Cut	1,306,971	....	1,306,971
Chagres section	7,512	....	....
Wet excavation—			
Chagres section	4,704	....	12,216
Total	1,319,187	....	1,319,187
PACIFIC DIVISION.			
Dry excavation—			
Locks, Dams and Spillways	120,765	....	120,765
Diversions	15,480	....	15,480
Prism, south of Pedro Miguel Locks	....	....	....
Total	136,245	....	136,245
Wet excavation—			
Pacific entrance	329,224	....	329,224
Miraflores Locks	....	....	....
Inner Harbor	10,591	....	10,591
Total	339,815	....	339,815
Total wet and dry excavation	476,060	....	476,060
TOTAL CANAL EXCAVATION.			
Dry excavation	1,516,759	....	1,516,759
Wet excavation	814,919	....	814,919
Total	2,331,678	....	2,331,678

Mean rainfall along Canal (eleven stations), 13.52 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc.; that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks.	53,636	86,510	140,146
Concrete laid in dams and spillways	3,158	....	3,158
Fill placed in dams	432,625	47,830	480,455

Gate Construction at Pedro Miguel.

Backfilling of the western wall of Pedro Miguel locks has been finished to the lower gates and tracks will be laid on the surface shortly in order to give the McClintic-Marshall Construction Company access to the lower gates. The company has ordered a new erection bridge, which will be placed first over the site of the lower guard gates. With its present bridge, the company has been erecting the upper guard gates in both chambers. The fill on the west side required about 50,000 cubic yards. On the east side, a steamshovel has been cutting its way up the knoll between the locks and the Central Division tracks, and will cast material over from it, toward the wall, to make the east backfill.

Monitors Moving toward Pacific.

Hydraulic excavation at the Miraflores lock pit is proceeding southward, in the direction of the Pacific entrance channel. A hydraulic monitor has been placed in front of the barrier of earth which separates the pit from the Pacific and will proceed with its removal. A new cofferdam is being constructed across the channel, a mile to the south but until it is finished a temporary fill across the lowest portion of the flats, several hundred yards below the place the monitor is to work, will prevent flooding. Along the axis of the flats is a channel prism, several feet below the surrounding area, made by the Central Division in former work, which is inundated at high tide. A slight and easily constructed fill across this keeps the whole area dry and allows the monitors to proceed on the upper cofferdam while the new and final one is under construction.

Change in Lighting System.

The lighting system of the Zone villages of Corozal and Diablo was transferred from the Balboa power house to that at Miraflores, on November 3. The Balboa power station, which also supplies all the electric light and power for Balboa, East Balboa and Ancon, was running under an overload of about twenty per cent. The removal of the Corozal-Diablo circuits decreased the load some fifty kilowatts, allowing the plant to run at normal capacity and resulting in noticeable improvement in the lights in all the villages concerned. The Balboa plant supplies alternating current of 60 cycles, while the Miraflores current is of

NOTES OF PROGRESS.

(Continued.)

25 cycles, but as the Corozal-Diablo circuits are practically for lighting alone the change in cycles makes no difference. There are a few small motors on the circuits in private use and these can be used on the new system.

The change is in consonance with plans for permanent light and power throughout the Zone, as the Miraflores plant will be permanent, while it is expected that the Balboa plant will be dismantled within two years. The Miraflores plant is at present operated by the Pacific Division, though the Mechanical Divison has charge of lighting the villages.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 71 per cent completed, 161,155 cubic yards, out of a total of 225,000, having been placed at the close of work on November 4. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
October 30	160	7.30	1
October 31	88	5.00	1
November 1	135	7.00	1
November 2	80	6.00	1
November 3	......	......	......
November 4	160	7.00	1
Total	623	32.30	1
Previously reported	160,532		
Grand total	161,155		

Ancon Crusher.

A statement of rock crushed at the Ancon quarry during the week ending November 4, follows:

Date.	Hours worked.	Cubic Yards.
October 30	7.50	3,091
October 31	6.10	2,437
November 1	5.30	2,317
November 2	7.45	2,685
November 3	Holiday.	
November 4	7.55	2,871
Total	35.10	13,401

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending November 4, follows:

Date.	Hours worked.	Cubic Yards.
October 30	4.20	1,895
October 31	5.30	2,358
November 1	4.30	1,901
November 2	3.15	1,532
November 3 (holiday)	......	......
November 4	4.00	1,813
Total	21.35	9,499

One Hundred Dollar Tourist Rate.

Owing to the small amount of travel by employes, from the Isthmus to the United States during the winter months, and in order that the passenger accomodations on Panama Railroad Company ships may be utilized as much as possible, a rate of $100 for the round trip from New York to Cristobal has been established. The tickets will be good for passage and return on any ships having available accomodations between November 1, 1911 and March 31, 1912. While on the Isthmus, tourists will be maintained at their own expense, the arrangement made by other lines, that passengers may sleep and eat on the ships during their stay in port, not applying on the Panama railroad ships. The ships will make voyages about every six days, according to the schedule published elsewhere in this issue, and they will remain in port on the Isthmus about five days.

Visit of Appropriations Committee.

It is expected that the Appropriations Committee of the House of Representatives will arrive on the Isthmus about November 16, and will remain about one week, during which time the Congressmen will inspect the Canal work and conduct hearings.

CONCRETE WORK IN THE LOCKS.

Over 70 per cent of the concrete for the locks is in place, the amount at the close of work on November 4, being 2,952,215 cubic yards, out of a total of approximately 4,199,400. A total of 25,517 cubic yards of concrete was laid in the locks during the week ending November 4.

GATUN LOCKS.

Over 84 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on November 4 being 1,684,721 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending November 4, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours daily, and the auxiliary plant 9 hours.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
October 30	1,408	27.00	5	404	6.00	2	60	1,923½
October 31	1,746	25.38	6	396	5.40	2	112	2,283
November 1	2,062	33.16	6	560	6.40	2	158	2,827½
November 2	1,572	25.56	6	204	2.40	2	118	1,926
November 3 (holiday)	......	......	......	......	......	......	......	......
November 4	1,254	20.20	4	252	3.40	2	112	1,658
Portable mixers*	......	......	......	200	......	......	......	......
Total	8,042	131.30	5.4	2,016	23.20	2	560	10,618
Previously reported	......	......	......	......	......	......	......	1,674,103
Grand total	......	......	......	......	......	......	......	1,684,721

*The 200 yards shown for the portable mixers are reinforced concrete and were placed on the following days; October 30th, 51½; October 31st, 29; November 1st, 47½; November 2nd, 32; November 4th, 40.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 90 per cent completed, 759,055 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on November 4. The record for each of the six 8-hour working days of last week, follows:

Date.	Auxiliary Plant. 2-cubic yard mixers.			Auxiliary Plant. ½-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
October 30	780	20.50	3	341	17.75	3	......	1,121
October 31	772	21.00	3	301	14.00	3	......	1,073
November 1	586	16.00	3	229	10.50	2	......	815
November 2	684	17.00	3	268	12.75	3	......	952
November 3 (Holiday)	......	......	......	......	......	......	......	......
November 4	806	20.00	3	204	9.00	2	......	1,010
Total	3,628	94.50	3	1,343	64.00	2.6	......	4,971
Previously reported	......	......	......	......	......	......	4,423	754,084
Grand total	......	......	......	......	......	......	4,423	759,055

MIRAFLORES LOCKS.

Over 37 per cent of the concrete for the system of two twin locks at Miraflores was in place on November 4. the total amount on that date being 508,439 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

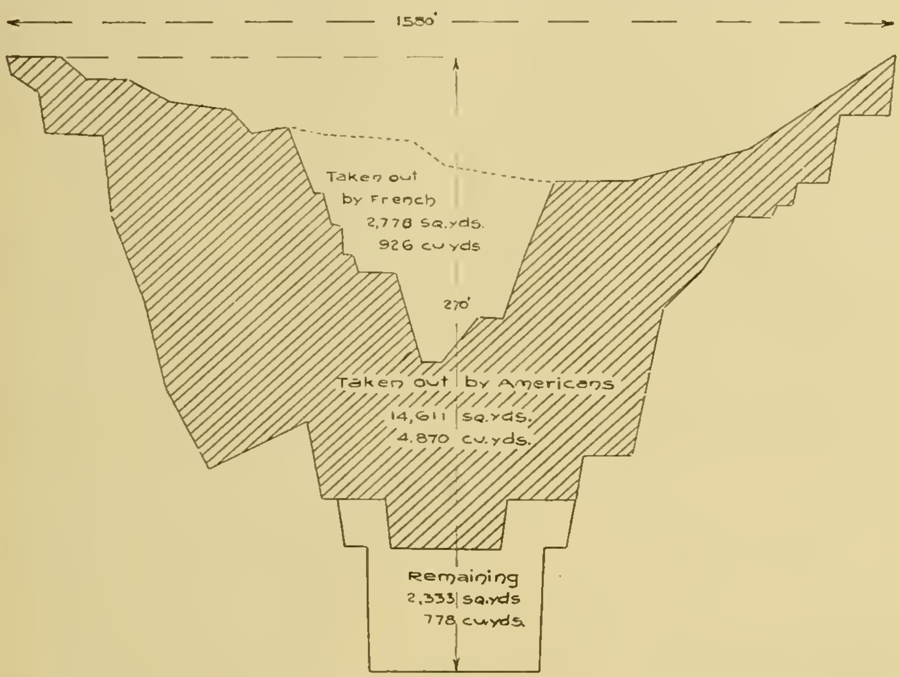
Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Auxiliary Plant. ½-cubic yard mixer.				Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Oct. 29	52	1.00	1	......	......	......	......	......	......	......	52
Oct. 30	1,214	33.33	7	816	11.90	2	449	35.75	5	......	2,529
Oct. 31	932	35.50	7	896	13.80	2	221	15.50	2	......	2,049
Nov. 1	382	12.50	7	812	11.50	2	448	36.50	5	......	1,642
Nov. 2	670	24.00	7	760	9.75	2	446	36.25	5	......	1,876
Nov. 3	(holiday)	......	......	......	......	......	......	......	......	......	......
Nov. 4	724	30.00	7	682	11.00	2	374	26.50	4	......	1,780
Totals	3,974	136.33	7	3,966	57.95	2	1,988	155.50	4.02	......	9,928
Previously reported	......	......	......	......	......	......	......	......	......	3,693	498,511
Grand total	......	......	......	......	......	......	......	......	......	3,693	508,439

CULEBRA CUT.

Present State of Excavation and Future Plans.

On November 1 there had been excavated from Culebra Cut 70,942,244 cubic yards of rock and earth, and there yet remained 18,501, 761 cubic yards. The average excavation per month during the 12 months just passed has been 1,372,000 cubic yards, and at this rate the work would be completed by January 1, 1913. But this rate cannot be maintained, because sections of the Cut at either end are nearing completion, and the time is approaching when the number of shovels now at work (42) will have to be reduced because of lack of room in which to work and the output must therefore decrease.

The Cut will be completed when the bottom is at 40 feet above mean sea level and 300 feet wide. The table shows the average depth of the lowest cut at each 5,000 feet in the nine miles between Bas Obispo and Pedro Miguel, not counting the drainage ditch which runs the length of the Cut and is necessarily lower than the rest of the excavation.



Entire section equivalent to 6,574 cubic yards per lineal foot of Canal Prism.

CROSS SECTION OF CULEBRA CUT AT CULEBRA WHERE THE TRENCH IS AT ITS GREATEST WIDTH.

Station.	Near Village.	Elevation above sea level, feet
1,480	Bas Obispo	39
1,530	Bas Obispo	39
1,580	Las Cascadas	39
1,630	Las Cascadas	50
1,680	Empire	51
1,730	Empire	88
1,780	Culebra	83
1,830	Cucuracha	60
1,880	Paraiso	40
1,930	Pedro Miguel	39

This table is merely suggestive of the conditions, because the work is done in a series of benches, and the lowest cut is only a single bench, about 40 feet wide, through the center. On the other hand it is typical of the state of completion at each mile, because the excavation proceeds uniformly throughout, with relation to the center line. At Bas Obispo and for a mile at that end of the Cut, the excavation is completed, except for a small amount of cleaning up and the taking out of inclines that must remain for the trains hauling spoil out of the trench on the north side of the summit. At the other end, near Pedro Miguel locks, there remain to be dug out about 800,000 cubic yards, in the canal and the anchorage basin, but this cannot be done until the construction of the north approach and flare walls of the locks has advanced farther. Between that point and Cucuracha there remains about enough digging to keep eight shovels busy for six months more.

By May 1, 1912, the excavation in Culebra Cut will be confined practically to the three miles between Las Cascadas and Cucaracha. On that date there will remain to be excavated about 11,000,000 cubic yards. It is expected that it will be possible to work 30 steam-shovels advantageously in this small section, an average of ten to the mile. This number will be gradually diminished as the excavation nears completion. There is every reason to believe that by July 1, 1913, the digging in Culebra Cut will be completed, except for such small amount of work as will be necessary after the steam shovels are taken out of the Cut. In this, no account is taken of the possibility of dredging of the last 15 feet on the summit of the Cut, but it is assumed that all the work will be done by steam shovel.

It is possible that unexpected developments in the slides at Culebra and Cucaracha will add to the excavation yet to be done, but this need not delay the completion appreciably because if the material continues to move into the Canal after the water is let in it can be dredged more economically than it could be dug out by steamshovel. At Culebra, where the banks on both sides are sliding, the channel is already 1,580 feet wide at top, and the earth is broken so far back on each side that the total width from break to break is 2,000 feet. A cross section of the Cut at this point of greatest width is printed herewith. The height of the picture is exaggerated in comparison with its width, because the horizontal scale is to the vertical as four to one.

EXECUTIVE ORDERS.

Amending Section 10 of Act No. 9, entitled "An Act to provide Sanitary Rules and Regulations for the Canal Zone."

By virtue of the authority vested in me, I hereby establish the following order for the Canal Zone:

Article 1. Section 10 of Act No. 9, entitled "An act to provide sanitary rules and regulations for the Canal Zone, Isthmus of Panama, and for the enforcement thereof," enacted September 2, 1904, is hereby amended so as to read as follows:

Section 10. Every physician, druggist, school teacher, clergyman, midwife, nurse, head of a family, or other person in attendance on or in charge of any one sick or injured, having knowledge of the existence in any district of the Canal Zone of any of the diseases hereinafter named, shall immediately report the same to the District Physician or District Sanitary Inspector. The diseases required to be so reported are: measles, rubella (rotheln), scarlet fever, typhus fever, relapsing fever, typhoid fever, malarial fever, yellow fever, Asiatic cholera, plague, tetanus, anthrax, small-pox, chicken-pox, (varicella), diphtheria, (croup), tuberculosis (of any organ), glanders, epidemic cerebrospinal menigitis, leprosy, infectious diseases of the eye, puerperal septicaemia, erysipelas, whooping cough, dysentery.

Any person who fails to make due report, as required by this order, of any of the above enumerated diseases shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine not exceeding $25.00, or by imprisonment in jail not exceeding thirty days, or by both such fine and imprisonment in the discretion of the court.

Article 2. This order shall take effect sixty (60) days from and after this date.

To Prohibit Practise of Medicine, Surgery, Dentistry, Pharmacy, or Midwifery without a License.

By virtue of the authority vested in me I hereby establish the following order for the Canal Zone:

Section 1. It shall be unlawful for any person to practise or attempt to practise medicine, surgery, dentistry, pharmacy or midwifery within the Canal Zone without first having obtained a license therefor from the Board of Health of the Canal Zone. Any person thus offending shall be punished by a fine not exceeding Twenty Five Dollars ($25.00), or by imprisonment in jail not exceeding thirty (30) days, or by both such fine and imprisonment in the discretion of the court; *provided* that this order shall not apply to commissioned surgeons of the United States Army and Navy, or Marine Hospital Service, nor to physicians, surgeons, dentists or pharmacists and their assistants and nurses employed by the Isthmian Canal Commission, nor to nurses acting under the orders of a licensed physician.

Section 2. Any person shall be regarded as practising medicine within the meaning of this order who shall prescribe for, operate on, or in any wise attempt to heal, cure or alleviate, or who shall in any wise treat any disease or any physical or mental ailment of another; *provided* that nothing in this order shall be construed to prohibit gratuitous services in case of emergency, or to the administering of ordinary household remedies.

Section 3. This order shall take effect sixty (60) days from and after this date.

THE WHITE HOUSE. WM. H. TAFT.
October 14, 1911.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M THS.	CULEBRA SECTION.*								CHAGRES SECTION.**				
	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
Jan....	....	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	....	169,447	389,399	175,802	255,385
Feb....	....	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	....	200,145	450,182	286,309	219,550
March .	....	132,840	239,178	815,270	1,290,885	1,434,597	1,509,728	1,728,748	....	324,233	619,491	484,846	297,339
April ..	....	126,749	213,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	....	329,483	510,020	428,777	102,103
May....	27,556	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	....	235,902	386,170	248,974	29,783
June ...	32,551	76,905	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	....	322,145	275,900	164,389	32,288
July ...	31,599	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	....	345,757	233,897	166,106	22,284
August	35,056	49,210	244,823	786,866	1,171,927	1,173,370	1,377,714	1,442,402	2,900	368,683	231,543	234,404	21,892
Sept ...	25,220	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	1,340,173	21,546	346,948	235,818	234,290	21,272
Oct ...	19,695	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	1,306,971	25,627	424,911	221,409	271,409	12,216
Nov....	28,860	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	....	44,044	336,390	93,619	260,882	....
Dec....	42,935	70,630	307,689	1,025,485	1,210,046	1,152,022	1,211,400	....	98,652	383,948	105,044	197,481	....
Totals.	243,472	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	14,036,311	192,769	3,787,992	3,752,492	3,153,669	1,014,112

MONTHS.	ATLANTIC DIVISION.						PACIFIC DIVISION.¶							
	COLON (MINDI)†		GATUN LOCKS, DAM AND SPILLWAY.††				PEDRO MIGUEL LOCKS.‡				MIRAFLORES LOCKS, DAMS AND SPILLWAY.‡‡			
	1909.	1911.	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1911.
January...	45,664	....	292,155	102,690	125,011	65,889	....	83,726	27,320	15,690	7,203	61,202	31,479	48,744
February.	46,046	47,102	282,797	95,031	123,738	50,511	....	58,242	9,486	6,809	39,046	53,689	15,300	12,936
March....	70,713	49,734	374,598	90,051	132,007	51,431	....	95,624	6,784	674	73,194	51,417	18,184	72,739
April.....	74,368	74,030	373,456	70,009	103,243	12,548	....	101,365	9,129	255	98,943	60,060	12,148	79,751
May.......	71,407	64,482	266,747	52,786	82,958	17,677	....	57,523	10,405	5,905	73,023	47,588	20,250	57,975
June......	80,101	59,157	244,951	36,556	88,088	4,840	13,228	70,971	8,420	7,454	68,691	55,653	21,994	38,023
July.......	82,378	58,125	213,359	39,058	95,503	6 897	22,648	77,503	4,410	6,273	104,369	50,999	11,990	97,884
August...	66,249	65,041	188,262	40,346	99,737	22,558	22,217	58,025	12,789	220	94,248	35,446	17,548	102,249
Sept'mber	61,437	74 487	145,990	49,945	103,040	3,489	28,833	48,825	10,405	3,472	90,923	31,803	8,590	96,112
October...	72,643	65,919	154,064	57,321	118,327	112	48,875	39,002	7,433	12,975	74,700	25,349	9,850	107,790
November	42,009	....	118,278	63,452	94,552	....	55,401	20,207	10,636	....	52,930	18,644	9,400	....
December	....	....	119,904	96,590	72,030	....	65,578	28,342	11,195	....	69,650	20,083	17,906	....
Totals..	713,015	558,077	2,774,561	793,835	1,238,234	235,952	256,780	739,355	128,412	59,727	846,920	511,933	194,639	714,203

*Total to November 1, 1911, 70,942,244 cubic yards.

**Total to November 1, 1911, 11,901,034 cubic yards, of which 181,951 cubic yards were removed by sluicing.

†Total to November 1, 1911, 2,034,898 cubic yards; in this total are included 172,851 cubic yards removed in 1907, and 590,955 cubic yards removed in 1908.

††Total to November 1, 1911, 6,409,389 cubic yards; in this total are included 26,628 cubic yards excavated October to December, 1906, and 1,340,179 cubic yards in 1907.

‡Total to November 1, 1911, 1,184,274 cubic yards.

‡‡Total to November 1, 1911, 2,267,695 cubic yards.

¶There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 588,311 cubic yards at different points in prism to Nov. 1, 1911. There were also 172 cubic yards removed by steam shovels outside of prism during October, 1908.

WET EXCAVATION.

MONTHS.	ATLANTIC DIVISION.							PACIFIC DIVISION.								
	ATLANTIC ENTRANCE.§					GATUN LOCKS †		PACIFIC ENTRANCE.§§							Miraflores Locks.§§§	
	1907.	1908.	1909.	1910.	1911.	1908.	1909.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1910.	1911.
Jan..	111,100	490,701	521,050	510,055	520,181	......	97,043	....	95,940	94,710	460,250	469,529	518,936	379,810	....	89,243
Feb..	110,002	427,722	444,910	493,448	455,318	......	132,291	....	95,940	93,480	663,519	671,477	285,791	386,866	....	87,335
Mar..	84,145	546,886	461,208	412,325	391,736	......	141,838	....	116,820	92,319	783,281	865,696	462,588	639,761	....	....
April	69,889	496,366	470,635	190,574	492,579	.....	17,938	....	110,700	104,855	676,539	731,767	534,322	439,622	....	....
May .	133,847	564,386	315,370	447,578	514,178	.....	52,011	....	112,340	122,157	530,466	720,753	484,509	548,047	....	....
June.	124,118	572,749	182,575	458,021	452,098	.....	38,829	50,676	62,697	133,575	656,621	844,685	475,486	576,100	....	....
July..	109,922	625,497	348,451	423,092	425,195	.....	....	41,533	98,400	108,338	696,170	733,181	515,782	520,692	....	....
Aug..	194,297	638,217	422,846	508,829	367,456	...	....	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....	....
Sept .	403,842	624,776	410,574	451,873	420,434	......	....	114,308	105,780	153,975	750,080	662,976	473,585	534,667	....	....
Oct...	415,120	505,260	314,778	549,788	470,400	......	....	81,836	97,170	357,122	762,276	720,920	467,873	329,224	40,000	....
Nov..	422,797	570,832	457,889	600,708	....	......	....	71,176	92,988	365,423	609,089	627,791	425,370	....	47,444	....
Dec..	442,835	679,604	489,121	482,370	....	8,583	....	71,094	90,528	349,551	729,960	727,460	387,034	....	68,681	....
Tot'ls	2,621,914	6,742,996	4,839,407	5,528,661	4,509,575	8,583	479,950	485,153	1,191,233	2,143,789	8,056,025	8,399,498	5,538,745	4,985,030	156,125	176,578.

§Total to Nov. 1, 1911, 25,670,018 cu. yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906.

§§Total to November 1, 1911, 30,799 473 cubic yards. Of this amount, 487,664 yards were removed by monitors.

§§§Total to November 1, 1911, 642,350 cubic yards; in this total are included 309,647 cubic yards excavated in 1909.

†Total to November 1, 1911, 488,533 cubic yards. There were also 38,425 cubic yards removed by dredges at Gatun Dam site in 1907.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.			PEDRO MIGUEL LOCKS.			MIRAFLORES LOCKS.		
	1909.	1910.	1911.	1909.	1910.	1911.	1909.	1910.	1911.
Jan	......	54,136	72,919	....	16,273	38,513	......	....	24,018
Feb...............	......	55,696	72,103	....	13,218	37,011	......	146	20,896
March	......	60,998	86,884	....	18,793	44,716	......	314	31,173
April..............	......	63,227	67,361	....	24,522	28,635	......	13	38,758
May................	......	74,273	67,844	....	29,576	19,135	......	27	36,154
June	......	89,401	55,305	....	30,631	18,243	......	1,603	26,536
July	......	84,001	71,046	....	41,464	19,906	28	3 672	32,840
Aug...............	1,298	85,686	66,928	....	51,264	20,736	74	6,030	57,003
Sept..............	12,294	76,720	57,298	2,370	50,702	15,379	......	18,133	56,083
Oct................	29,378	86,949	53,636	8,310	61,422	25,637	......	22,159	60,873
Nov...............	30,270	75,152	....	10,169	64,248	....	......	23,871	....
Dec................	42,832	80,212	....	13,007	42,834	....	......	21,533	....
Total............	116,072	886,451	671,324	33,856	444,947	267,911	102	97,501	384,334

From March 17, 1909, to November 1, 1911, there were placed in the Spillway of Gatun Dam 162,140 cubic yards of concrete, including 3,650 cubic yards placed in Sept., 1911; in Miraflores Dam, there were placed 321 cubic yards up to November 1, 1911.

FILL PLACED IN DAMS.

M'THS.	GATUN.*				PEDRO MIGUEL.†		MIRAFLORES.‡			
	1910.		1911.		1910.	1911.	1910.		1911.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan...	178,254	236,994	211,992	218,690	...	......	....	28,151	89,243	24,685
Feb..	292,215	271,788	301,733	211,008	11,510	......	....	1,438	87,335	32,404
Mar..	210,387	332,661	342,800	255,047	22,860	......	....	5,385	25,131	23,940
April	242,440	263,437	368,658	205,130	31,394	......	....	....	14,100	67,260
May..	249,283	194 868	419,348	207,751	23,572	......	....	6,480	18,353	30,032
June .	384,166	258,653	432,008	227,996	1,350	......	....	7,356	53,858	28,315
July..	462,092	180,111	324,947	201,996	......	14,865	....	4,290	24,957	54,415
Aug..	406,606	229,774	259,389	232,426	......	24,812	....	10,898	25,000	72,203
Sept..	457,637	223,102	261,838	194,497	......	4,052	....	11,220	6,409	34,480
Oct...	480,732	259,619	214,320	218,305	......	3,400	40,000	14,370	7,130	37,250
Nov..	129,666	266,105	....	....	......	......	47,444	8,960	....	....
Dec..	243,121	169,575	....	....	......	...	68,681	39,224	....	....
T'tal	3,736,599	2,886,687	3,137,033	2,172,846	90,686	47,129	156,125	137,772	351,566	404,984

*Dry fill begun in January, 1907, and 2,096,477 cubic yards of wet, and 3,241,418 cubic yards of dry fill were placed in 1907, 1908 and 1909.

†170,166 cubic yards placed in dams up to December, 1909, inclusive.

‡138,587 cubic yards of wet fill and 472,091 cubic yards of dry fill were placed in dams up to December, 1909.

CANAL EXCAVATION TO DATE.

By French Companies		78,146,960
French excavation useful to present Canal		29,908,000
By Americans—		
Dry excavation	95,224,299	
Dredges	57,831,341	
Total		153,055,640
May 4 to December 31, 1904	243,472	
January 1 to December 31, 1905	1,799,227	
January 1 to December 31, 1906	4,948,497	
January 1 to December 31, 1907	15,765,290	
January 1 to December 31, 1908	37,116,735	
January 1 to December 31, 1909	35,096,166	
January 1 to December 31, 1910	31,437,677	
January 1 to November 1, 1911	26,648,576	

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation	8,444,287	34,641,263	55,860	12,586,559
Dredges	26,196,976		12,530,699	
Central—				
Culebra Cut	70,942,244	82,843,278	18,501,761	18,958,018
All other points	11,901,034		456,257	
Pacific—				
Dry excavation	4,118,685	35,571,099	2,813,395	10,723,162
Dredges	31,452,414		7,909,767	
Grand totals		153,055,640		42,267,739

STEAMSHOVEL DIPPER TRIPS.

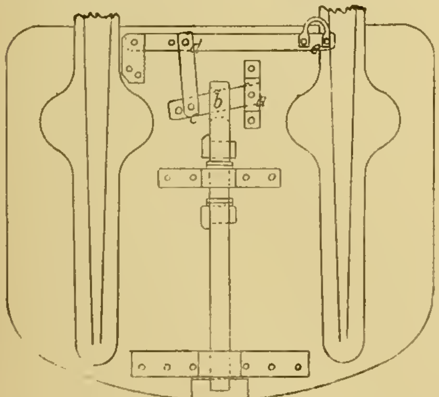
Development of Unlatching Devices from Simple Lever to Steam Power Trips.

An investigation is under way to determine the relative efficiency of the steamshovel "trips," operated by steam, known as the Geddes and Wichman "trips." These are the culmination of a development in the improvement of tripping devices that began soon after the first steamshovels were set at work in Culebra Cut.

In the accompanying sketch (C) the dipper of the shovel is shown in dumping position, the emptying process being accomplished by pulling a latch, by which the door of the shovel is held. When the shovel is ready to dig, the dipper is near the ground with its center back of a vertical line through the center of the shipper shaft, as the shaft of the big gear is called. In this position the door of the dipper closes of its own weight and is latched firmly. When the dipper is loaded, the spoil within it bears down upon the door and tends to hold it so firmly in place that the power required to open the latch is often so great as to cause a serious strain on the craneman, who unlatches the door. Ease in opening the door is an advantage both to the craneman and in accelerating the work of digging. The various improvements on methods of unlatching, or of "tripping" the latch, as it is called, have in view this dual advantage.

When the shovels arrived on the Isthmus they were equipped with a single lever latch operated by a 1¼-inch rope in the hand of the craneman, and attached at its other end to the "trip" of the dipper. Several pulls were often necessary to open the latch, and almost invariably a great effort was required. The string by which this "trip" was operated passed through a sheave on the dipper stick near the dipper and thence to the craneman's hand.

The first improvement was to compound this original "trip," and in the drawing herewith (*A*) the compound "trip" is shown. The original was the simple lever with the fulcrum at (*a*), the weight at (*b*) and the power at (*c*).



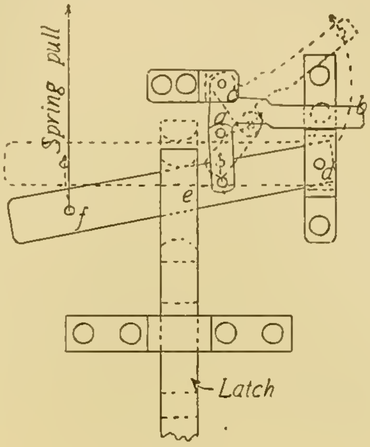
SKETCH A.

DOOR OF DIPPER OF 95 TON STEAM SHOVEL SHOWING COMPOUND LATCH TRIP.

Height of door........................ 4¾ feet
Width................................ 5½ feet

In the compound "trip," another fulcrum was made at (*d*) and the power was applied at (*e*), where the line was attached. By this device a movement of 20 inches in the line resulted in a 1-inch movement of the latch.

Among improvements upon the compound device, one that was given a trial in 1909 was the "spring trip" which consisted of the lever, shown in the second illustration herewith, (*B*) and a bar passing through a slot in the latch, with a spring attached at its outer end, the power for unlatching being supplied by the spring. The rope by which the "trip" is operated is attached at (*b*); the fulcrums are at (*c*) and (*d*); at (*a*) is a toggle joint; at (*e*) the weight; at (*f*) the power applied by the spring. The door is closed by its own weight, when in digging position, placing a tension of 1,300 pounds upon the spring, and drawing the toggle joint erect. When the dipper is in dumping position, the craneman pulls the rope, thereby breaking the toggle joint and allowing the spring to exert its pull upon the latch, which flies back, permitting the dipper to empty. The spring required was of ⅜-inch wire, 31 coils, 2¼-inches outside diameter, and 21 inches long when free. This device worked satisfactorily, but the toggle joint required constant renewing, and some difficulty was experienced in obtaining suitable springs, so that the appliance was finally abandoned.



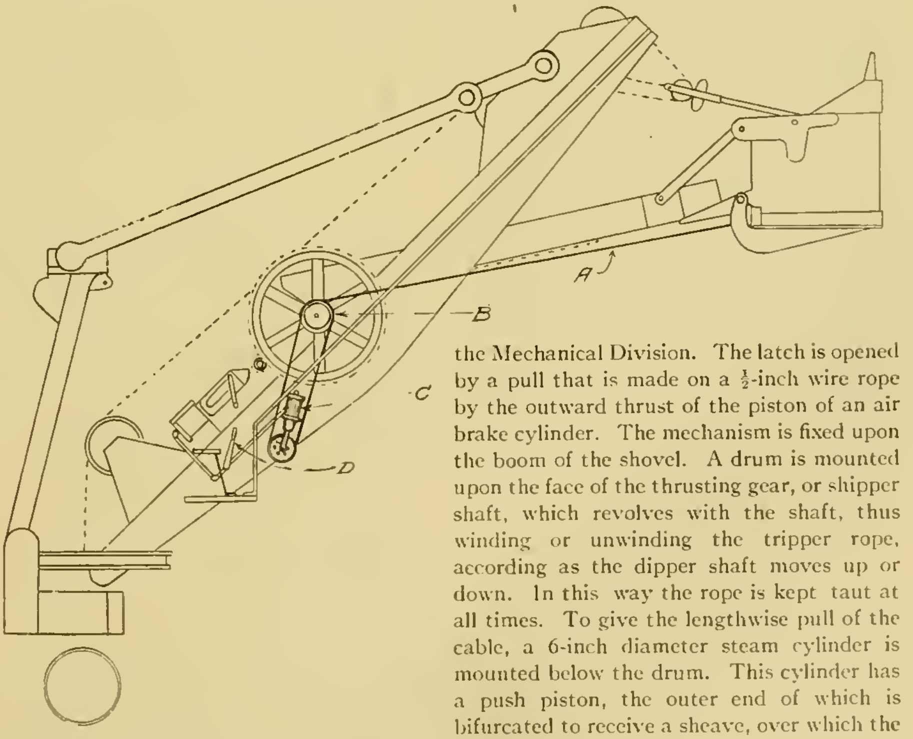
SKETCH B.

PORTION OF STEAMSHOVEL DIPPER DOOR SHOWING ARRANGEMENT OF SPRING LATCH.

(*a*) Toggle joint. (*b*) Power to break joint. (*c*) Fulcrum of toggle lever. (*d*) Fulcrum of spring lever. (*e*) Weight of latch. (*f*) Power of spring.

The first steam power trip was a device placed upon his shovel by Thomas Custy, a steamshovel engineer, in 1908, but after a few month's trial this was discarded. This device was improved upon by A. H. Geddes, also a steamshovel engineer, until it became practicable, and a patent has been granted to him. It was described at length in THE CANAL RECORD of May 3, 1911. In this device a steam cylinder is located on the dipper stick near the dipper, the piston is connected with the dipper latch through a chain and a series of levers, and when steam is admitted to the cylinder the thrust of the piston operates the levers and unlatches the door. Steam is admitted and exhausted from the cylinder through a three-way valve located on the boom beside the craneman's seat. A steam pipe extends from the valve along the boom opposite the dipper stick slot, and at the end of this pipe, and on the cylinder, are universal joints which are connected with one another by a flexible hose. After a thorough trial this device was adopted, upon the recommendation of a committee of two mechanical experts and a steamshovel engineer, who reported that the capacity of a shovel was increased 100 cubic yards a day by its use.

The latest device, that shown in the illustration, was invented by F. S. Wichman of the Mechanical Division. The latch is opened by a pull that is made on a ½-inch wire rope by the outward thrust of the piston of an air brake cylinder. The mechanism is fixed upon the boom of the shovel. A drum is mounted upon the face of the thrusting gear, or shipper shaft, which revolves with the shaft, thus winding or unwinding the tripper rope, according as the dipper shaft moves up or down. In this way the rope is kept taut at all times. To give the lengthwise pull of the cable, a 6-inch diameter steam cylinder is mounted below the drum. This cylinder has a push piston, the outer end of which is bifurcated to receive a sheave, over which the cable passes on its way to the drum. Steam is admitted to the cylinder, when it is desired to trip the dipper door, through a three-way cock, operated by a lever at the craneman's seat. When the steam exhausts, the spring in the cylinder pulls the piston back into position, and the tripping operation may then be repeated. This device has undergone a successful test on two 95-ton steamshovels.



SKETCH C.

STEAMSHOVEL BOOM, SHOWING DIPPER STICK, DIPPER, AND OPERATING GEAR, WITH WICHMAN TRIPPING DEVICE.

A—½-INCH WIRE ROPE. B—WINDING DRUM. C—STEAM CYLINDERS. D—OPERATING LEVER.

CONDITIONS AT CAMP OTIS.

Tenth Infantry, U.S.A., in Crowded Quarters at Las Cascadas.

The Tenth Regiment of Infantry, U. S. A., on November 4 completed its first month of service on the Isthmus. The temporary quarters in Camp E. S. Otis, at Las Cascadas, require a great deal of crowding of men and officers and the grounds afford no space for even company formations; no authorization has been made for improvements and no one in the regiment knows whether it is to stay on the Isthmus or is resting over here before making another move. It is the expectation, however, that a few more quarters will be erected shortly, presumably Commission buildings removed from the Gatun Lake area.

One of the new buildings will house the post exchange. This is a combined general merchandise store and clubhouse for the men. The necessaries of wearing apparel, and sutler's supplies are on sale, under a credit system which automatically extends the men's spending period over the month. In the same building are rooms for reading and for cards, billiards and other amusements.

None of the men are quartered in tents, though several of the company messes are under canvas. By direction of the War Department, the regiment obtains its commissary supplies from the Commissary Department of the Panama Railroad Company. Every morning by nine o'clock the mess sergeants give their lists of foodstuffs for a day's provisioning to the regimental commissary, who combines them in a bulk order on the Cristobal store, from which they are delivered the next morning at 6.45 at the regimental storehouse. From this point detachments from the messes take their supplies away on their backs or in wheelbarrows, as the road through the camp is, for the most part, at present impassable for wagons. Some of the messhalls and tents are three quarters of a mile from the storehouse. The regulation Army ration costs here 31 cents per day. At Fort Sam Houston, where the regiment was stationed before its embarkation for the Canal Zone, the day's ration cost 22½ cents per man. The cost of the ration is calculated from the prices prevailing in the vicinity and the mess allowances are made accordingly, the company commander spending as much extra on the mess as he deems wise, from the company fund. On November 4, there were 810 enlisted men present with the regiment, and the aggregate monthly expenditure on their rations is about $8,500.

The sick of the regiment are treated at Ancon Hospital. The sanitation of the camp area is in charge of the regimental sanitary department, which also maintains a dispensary. The camp is well drained and the quarters are screened. The health of the soldiers has been excellent, the few cases of illness being due principally to maldigestion.

Numerous permits are granted for visiting Panama and Colon and the Canal Zone villages. The members of the regiment and their families are given half-rates on the Panama railroad, and avail themselves extensively of the opportunities of observing the Canal construction. At present, on account of restricted grounds, there are no formations, except squad, in rank. Rolls are called in the quarters, the men standing at attention beside their bunks. "Fatigue" duty has provided exercise, and it is hoped shortly to have target practice and service marches. Band concerts are given on Monday and Thursday afternoons at three o'clock and on Wednesday and Saturday evenings at seven-thirty. At these, and at any time during the day, the public is welcome. Of the thirty-five officers present, eighteen have their families with them.

Examinations for Commissions in Volunteer Forces.

Examinations will be held on November 14 at 10 a. m. in the Administration Building, Ancon, to test the fitness of applicants for commissions in the volunteer forces of the United States, in accordance with the law of January 21, 1903 and the General Orders of the War Department, March 25, 1909. The gist of the law and regulations was published in The Canal Record of June 17, 1911. The examining board will consist of Lieut.-Col. Charles F. Mason, Medical Corps, Maj. Joseph H. Ford, Medical Corps, Maj. Charles Gerhardt, Capt. Ethelbert L. D. Breckenridge, and Capt. James J. Mayes, 10th Infantry.

Health Lectures in Three Languages.

The last in the course of free health lectures for the people of Colon, which was instituted last May by the Cristobal Woman's Club, aided by the Department of Sanitation of the Isthmian Canal Commission, was held in the conversorium on Tuesday evening, October 31. The speaker was Dr. J. Tomaselli, of Santa Tomas Hospital, Panama, and the lecture was in French, the audience of more than 400 being composed of members of the French colony of Colon. Stereopticon views showing the progress and development of the tuberculosis bacillus were used. There have been seven lectures in the course; four being in English, two in Spanish, and this last for the French speaking people. The lectures will be resumed after the beginning of the new year.

Baseball.

It has been decided to issue passes to not more than 12 men of each team in the Isthmian Baseball League playing at other than their home grounds, on condition that the League adopt a resolution that no player shall be enrolled as a member of any team who has not been employed by the Isthmian Canal Commission or the Panama railroad for at least six months,an exception being authorized in the case of enlisted men of the Marine battalion stationed on the Isthmus and of the 10th Infantry.

Activities of Various Organizations.

The regular meeting of the Paraiso Woman's Club was held in the lodge hall on Wednesday afternoon, November 1. Following the business session, there was a discussion on club work. A committee has been appointed to arrange for the placing of swings in the school yard. At the meeting on November 15, there will be a program on hygiene and sanitation. The membership of the club is increasing.

At the meeting of the Cristobal Woman's Club on Wednesday, November 1, Mr. James Ten Broeck Bowles gave a talk on garbage disposal. The program was under the home department. Miss Alexander, of the division of schools, will speak on primary education at the meeting under the education committee on December 6.

Hallowe'en entertainments were held last week: in Cristobal by the Union church, at Gatun by the Sunshine Society, at Las Cascadas by the residents for the children of the village, at Empire, at Paraiso, where the Pacific Dancing Club celebrated by a masquerade ball, and at Corozal hall, where a program for the children was followed by informal dancing.

The second monthly meeting of the teachers of the Canal Zone public schools was held in the Ancon school building on Saturday morning, November 2. On the afternoon of the same day Mrs. Maurice H. Thatcher gave a tea and reception to the teachers. There were about 35 present.

On Friday, November 17, the annual bazar of the Ladies' Foreign Missionary Society of the Methodist Episcopal Church, Panama, will be held at Ancon Hall. A feature of this sale will be a large supply of fancy articles suitable for Christmas gifts. The hall will be open both afternoon and evening.

A request has been made for magazines for the prisoners at the stockade at Mandingo River. There are about 120 convicts there at work on the road, the larger percentage of these being English speaking men. Magazines may be sent to the District Quartermaster, Empire, designated for the Mandingo River Stockade.

Zone Contribution to Red Cross.

The following is a copy of a letter received from the Secretary of the American National Red Cross, acknowledging receipt of check for $709.63, the amount raised by the Canal Zone Chapter for the Endowment Fund:

Lieut.-Col. C. A. Devol,
Chairman, Canal Zone Red Cross Chapter,
Culebra, C. Z.

My dear Colonel Devol:

Your letter of September 9, received this morning, enclosing check for $709.63, the amount raised in the Canal Zone for the Endowment Fund. The Canal Zone Committee is one of the first to complete its share.

Very sincerely yours,
Chas. L. Magee, *Secretary.*

Steamboat Inspection Laws.

The law providing for the inspection of all steam vessels navigating the waters of the Canal Zone, promulgated in Executive Order No. 1,386, dated July 21, 1911, goes into effect on Tuesday, November 14. The law was published in full in The Canal Record of August 16, and the final clause of the order provided that it should take effect ninety days after such publication. The general purpose of the law is to prevent the use of unseaworthy vessels, regulate the carrying of passengers, and to avoid accidents resulting from failure to observe the usual rules in handling ships.

The ladder dredge *Gopher*, which has been operated by the Pacific Division in the excavation of sand at Chame, is being overhauled at the Balboa shipyards. Its place at Chame has been taken temporarily by the *Mole*, which will return to its work in the Pacific entrance channel, opposite the shipyards, when the *Gopher* is returned to Chame.

A train of rock will be sent from Culebra Cut to Cristobal every day, there to be dumped on the mole which is being extended from the shore into Limon Bay, as the approach to the system of docks at the Atlantic terminus. The material used up to the present time has been from the borrow pit alongside the railway at Mount Hope.

Fortification Work.

The proposed dock for unloading dynamite at Mindi, at the junction of the Canal and the old French canal, will be built so as to be of use in unloading rock and sand for the fortification work at Toro Point. To accomplish this the plans published heretofore will be changed so that the deck of the dock will be 13 feet above sea level, thus providing for unloading by gravity from cars upon the dock into barges tied up alongside; a standard gauge track will be laid along the face of the dock as close to the front as possible, and a chute will be constructed upon the front of the dock, so as to fold against the face when a ship ties up there, and so fastened that it may follow the fall of the barge in loading.

Lumber and Piling.

Orders recently placed for lumber aggregate about 600,000 board feet.

The Ensiger Lumber Company has been awarded contracts for the following material: 42,875 board feet of yellow pine in pieces 1 by 12 inches, and 2 by 12 inches, and in 30 and 35 foot lengths. This lumber is to be used in making sticks or poles for tamping dynamite, the sticks to be 1, 1¼, and 1½ inches in diameter. Four by four timbers, from 12 to 26 feet long, 55,000 board feet. Four by six timbers, from 12 to 16 feet long, 100,000 board feet.

W. R. Grace & Co. have been awarded contracts for the following materials: Spud timbers for use on dredges, two 36 by 36 inches and 70 feet long; two 24 by 24 inches and 60 feet long; eight 20 by 20 inches and 70 feet long. Creosoted piling for use in the foundation of the wing wall of Miraflores locks, 750 lengths, 40 feet long; 250 lengths, 45 feet long; 500 lengths, 50 feet long; tips of all to be not less than eight inches in diameter.

Yellow pine or Douglas fir boards: 1 by 10 inches, 14, 16, and 18 foot lengths, 50,000 feet; 1 by 12 inches, 12 to 18 foot lengths, 100,000 feet; 3 by 12 inches, 16 foot lengths, 50,000 feet; 4 by 6 inches, 16 to 24 foot lengths, 70,000 feet; 3 by 14 inches, 16 and 20 foot lengths, 5,000 feet; 4 by 12 inches, 22 and 26 foot lengths, 20,000 feet; 6 by 8 inches, 18 and 24 foot lengths, 10,000 feet; 8 by 16 inches, 22 and 30 foot lengths, 130,000 feet.

Work has been begun looking toward the installation at Gamboa, where the construction railroad from Culebra Cut joins the relocated line of the Panama railroad, of a 24 lever mechanical interlocking plant, two power-operated home signals, to govern the movement of trains passing from one system of tracks to the other. The relocated line in this section will be used by trains from Culebra Cut until the excavation north of the summit is completed.

Motor car No. 7, built at Gorgona shops, has been placed in service. It will accomodate seven passengers, has a 40 horsepower gasoline engine, and is capable of running forty miles an hour on level track. It is stationed at Culebra, and at present is used as an inspection car for visitors wishing to see Culebra Cut.

Married.

TUDOR-WHEELER—At Cristobal on October 30, Anna Elizabeth Wheeler of Brooklyn, N. Y., to Walter Pierce Tudor of Empire, Canal Zone, the Rev. A. A. Nellis officiating. Canal Zone residence, Empire.

SMITH-HARRIS—At Empire on November 3, Ina Clytie Harris to Carl Francis Smith, the Rev. A. A Nellis officiating.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The standing of the teams in the Isthmian Basket Ball League on November 4, was as follows:

Team.	Won.	Lost.	P. C.
Cristobal	5	0	1.000
Gatun	4	1	.800
Gorgona	3	1	.750
Culebra	2	3	.400
Corozal	0	4	.000
Empire	0	5	.000

Results of games played on November 4, 1911: Cristobal, 27; Empire, 10. Gatun, 22; Culebra, 20.

Games to be played November 11, 1911.—Cristobal at Gorgona; Corozal at Empire.

COROZAL.

Over 300 people attended the Hallowe'en Entertainment at the Clubhouse. Lingo's orchestra furnished music for the evening. A vaudeville troupe from Gorgona entertained the audience with songs and two short sketches. Mr. King of Miraflores sang three songs. Messrs. Boyd and Jewens were the prize cake walkers. Refreshments consisting of sandwiches, doughnuts, coffee, apples and pop corn were served during the evening.

Eighteen men attended the meeting of the Discussion Club on Wednesday night. The subject for discussion at the weekly meetings during November will be "Sanitation and Hygiene".

CULEBRA.

The results of the bowling games on Saturday night, November 4, were as follows:

Culebra	752	801	864
Gatun	748	763	801

The Gatun basket ball team defeated the local team on Saturday night by the score of 22 to 18. Following is the line-up:

Culebra.	Gatun.
Cushing	Huber
Koperski	Wright
Hepler	Mirinoth
Mitchess	Mitchell, J.
Van Zant	Fitzpatric
Barcroft	
Kenny	

In the local bowling tournament recently finished, S. S. Baumer won the first prize and A. T. Sjoblom the second prize.

A billiard tournament will begin as soon as names of those desiring to play are received.

All men interested in the Thanksgiving bowling tournament should hand their names to the bowling alley manager or leave them at the desk.

EMPIRE.

The following high scores were bowled on the alleys during the past week: Tenpins—Pinney, 214, 202, 221, 204; Parkis, 202, 204; Nelson, 210. Duck pins—Rodeighiro, 101, 103; Pinney, 113, 121; H. King, 102.

Empire took three games from the Gorgona team on Saturday night November 4. Scores were as follows:

Empire.				Gorgona.			
Gustaveson	217	178	167	Arnold	148	124	148
Spinks	179	158	147	Sims	194	191	107
Rodeighiro	192	176	158	Bishop	131	169	140
Pearson	195	246	234	Burmester	125	139	121
Huson	168	172	184	Orr	137	136	157
Total	951	930	890		759	735	673

Pearson's score of 246 for one game and a total of 675 pins for three games are the best scores in this year's tournament. Empire still holds first place in tenpin bowling by again winning the Isthmian tournament.

The preliminaries in the billiard tournament having been played, the standing is as follows: Class A, Messrs. Wood and Hersh; Class B, Messrs. Zinn and Rossiter; Class C, Garrett and Sawtelle. The finals will be played at once.

GORGONA.

Two hundred and fifty people attended a sociable held in the gymnasium on November 1. Hallowe'en games were played, stories told, contests engaged in, and refreshments were served.

J. D. Safford delivered an illustrated lecture on "Alcohol" on the evening of November 2.

At bowling last Saturday night, Gorgona lost three games on the local alleys to Empire, the scores being as follows:

Empire.				Gorgona.			
Pinney	162	204	156	Roper	168	145	138
Giavelli	154	177	148	M. Van	148	141	155
Snyder	134	158	174	Sexton	150	136	156
Davis	141	181	119	R. Van	126	157	155
Parkis	173	175	148	Haggerty	131	155	113
Total	764	895	746		723	734	717

About 120 people were present at the sunset song service last Sunday night. Mrs. R. C. Shady played the piano, E. Reinhold the violin and J. T. Hopkins the cornet.

GATUN.

Gatun won all three games of bowling from Culebra on Saturday evening by the following scores:

Gatun	791	852	743
Culebra	650	659	684

The second meeting of the Drop-in Discussion Club was held immediately after the band concert on Sunday evening. Thirty-two men were present. Among those who spoke were Messrs. Windes, Gilkey, Gayer, Dillon, Christianson, Hastings, and Brown. The subject was "Dangerous and Unsanitary Conditions". The Secretary acted as leader.

Gatun won its fourth consecutive victory at basket ball on Saturday evening November 4, when it defeated the Culebra team by a score of 22 to 20.

A Spanish class will be organized on Wednesday evening November 7. The method will be conversational. No books will be required. The teacher is Senor Jose Gomez.

A mid-week boys' Bible class will be organized in the near future and placed under the direction of the physical director.

A match game of basket ball was played on Saturday evening November 4, between Gorgona's regular team and a scrub team from Gatun. The Gatun players were Rogers, Taylor, Kenney, Hortenstine and Whiston. The score was 41 to 24 in favor of Gorgona. An informal reception with singing was held after the game.

The receipts from the barber shop, pool room, and refreshment counter for the month of October were the largest in the history of the clubhouse.

The membership was increased 26 members during the month of October.

Miss Harris entertained the members on Thursday evening November 2, with piano selections.

Open house was observed on November 3, in honor of the independence of Panama.

CRISTOBAL.

The last games in the Isthmian Ten Pin League will be rolled with the Camp Elliott team on the local alleys on Saturday night, November 11.

In the tournament held on November 3, for the duck pin individual championship of Cristobal, twenty-five men participated. The winners scored as follows: M. A. Smith, 111, 81, 109,-301; C. G. Jaques, 93, 111, 84,-288; F. E. Herrington, 95, 103, 84,-282.

In rolling off the prize for high score between Smith and Jaques, Smith won.

The following high scores were made during the week ending November 4, 1911: Duckpins—Orr, E., 103, 105; Herring, 110; Barrett, 110, 108; Russell, 100; Wheeler, 100, 109; Howard, 105, 104, 107, 106, 102; Marques, 118; Louch, 105, 102; Abernathy, 102; Gibson, 103; Herrington, 103; Jacques, 111; Smith, 111, 109; Harrison, 101. Ten Pins—Gibson, 201, 207, 211, 207, 201; Collins, 206, 202, 209; Louch, 212, 206, 221; Buser, 209, 209; Bullard, 226, 202; Henry, 213, 208; Wallace, 209; Strong, 203.

Wednesday night, November 1st, 223 people attended the motion picture show. The next entertainment in this series will be given on Monday November 13.

The basket ball game between Empire and Cristobal on Saturday night was won by the Cristobal team.

The Bible discussion club on "Social Christianity" will hold its next meeting on Monday evening November 13, from 7.30 to 8.15 o'clock. The topic for discussion will be "Unsanitary Occupation." All men are cordially invited to this forty-five minutes study.

A lecture on "Tuberculosis" will be delivered in the auditorium on Tuesday evening November 14, at 8.15 o'clock, by Dr. J. J. McCormick, assistant health officer, Panama. No admission fee will be charged and the meeting is open to the public.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending November 8,1911 (75th meridian time):

DATE.	Low.	High.	Low.	High.	Low.
	A.M.	A.M.	A.M.	P.M.	P.M.
November 9		5.00	11.25	5.30	11.45
November 10		5.45	12.10	6.18	
November 11	12.32	6.33	1.00	7.10	
November 12	1.25	7.25	1.50	8.05	
November 13	2.27	8.25	3.53	9.10	
November 14	3.35	9 40	4.05	10.25	
November 15	4.50	11.00	5.20	11.40	

Band Concert.

A band concert will be given by the Isthmian Canal Commission Band at Gorgona, C. Z., on Sunday, November 12, 1911, at 6 p. m.

The next concert will be given at Hotel Tivoli, Ancon, November 19, at 7.30 p. m.

OFFICIAL CIRCULAR.

Acting Division Engineer, Atlantic Division.

CULEBRA, C. Z., October 30, 1911.

CIRCULAR No. 418:

EffectiveOctober 31, 1911, and during the absence on leave of Lieutenant Colonel Wm. L. Sibert, Major Chester Harding will be in charge of the Atlantic Division as Acting Division Engineer.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Sale of Panama Cafe Building.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., October 27, 1911.

Sealed proposals for the purchase of building located on lot north of Panama passenger station, and known as "Panama Railroad Cafe" building, will be received in this office until 3.00 p. m., November 20, and then opened.

Bids must be made for the building as it stands on the ground, the successful bidder to remove the building within thirty days' time after notified that bid has been accepted.

Proposals should be accompanied by certified check, Post Office money order, or cash, for 5 per cent of the amount of bid, which will be returned to unsuccessful bidders.

The successful bidder will be given a freight rate of $2.25 per ton in case it is desired to ship the material to any point along the line.

Envelopes containing bids should be endorsed: "Proposal for purchase of Panama Railroad Cafe Building," and addressed to

J. A. SMITH,
General Superintendent,
Panama Railroad Company.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon during the week ending November 4:

Prinz Joachim, October 29, from New York, with 267 cases blasting caps, for stock.

Panama, October 30, from New York, with 72 packages locomotive crane parts, 65 kegs bolts, for Atlantic Division; 32 kegs bolts, for Pacific Division; 12 crates steel plant material, 7 cases electrical material, for Mechanical Division; 38 cases drugs and sundries, for Sanitary Department; 27,600 pieces building tile, for Panama Railroad Company; 12 cases castings, 14 cases grindstones, 54 cases salt water soap, 100 cases laundry soap, 100 cases toilet soap, 100 cases sapolio, 100 bales oakum, 490 barrels engine oil, 105 kegs bolts, 22 cases bolts, 14 cases fusees, 10 cases chinaware, 272 bundles steel bars and plates, for stock, and a miscellaneous cargo, the whole consisting of 29,413 packages, weighing 510 tons.

Venus, October 31, from Jacksonville, with 2,289 pieces untreated piling, 35,121 pieces yellow pine lumber, for stock; 395 pieces creosoted piling, for Atlantic Division; 271 pieces cypress lumber, for Mechanical Division.

Atenas, November 2, from New Orleans, with 1,629 pieces yellow pine lumber, for Mechanical Division; 6,738 pieces yellow pine lumber, 75 sacks cotton seed meal, 577 bales straw, 1,272 bales hay, 20 pieces untreated piling, 68 peices creosoted piling, for stock; 1,348 pieces creosoted ties, for Panama Railroad Company.

Santa Marta, November 2, from New York, with 36 drums calcium carbide, for stock.

The following ships arrived at, or departed from the Port of Balboa during the week ending November 4, 1911:

Arrivals—October 30, *Chile*, from Guayaquil; October 30, *Quilpue*, from Valparaiso; October 31, *City of Para*, from San Francisco; October 30, *Urubamba*, from Callao.

Departures—October 30, *Manavi*, to Buenaventura; October 30, *Ucayali*, to Callao; November 1, *Ecuador*, to Guayaquil; November 1, *Aysen*, to Valparaiso; November 3, *Stanley Dollar*, to San Francisco; November 4, *Kansas City*, to San Francisco.

October Rainfall for Three Years.

STATION.	1909	1910	1911	Station Average	Years of Record	Rai'y days 1911
Pacific Section-						
Ancon	8.77	8.86	10.90	10.46	15	17
Balboa	11.20	9.98	8.47	9.07	13	15
Miraflores	17.53	13.40	9.71	12.37	4	21
Pedro Miguel	17.47	13.42	12.92	13.06	4	18
Rio Grande	18.52	14.72	16.65	13.62	7	22
Central Section-						
Culebra	17.70	13.51	17.06	11.60	23	25
Camacho	20.63	17.20	18.81	14.56	6	25
Empire	21.14	12.57	14.97	14.24	7	25
Gamboa	16.98	12.90	12.75	12.77	29	24
Alhajuela	19.32	15.37	13.39	13.52	13	24
El Vigia	20.93	16.90	14.13	16.44	4	22
Gorgona	18.90	13.33	13.19	13.11	8	20
San Pablo	15.81	16.88	8.63	14.64	5	24
Tabernilla	17.02	14.72	10.86	16.73	5	26
Bohio	16.34	14.53	13.24	16.60	18	27
Trinidad	14.58	16.30	15.56	14.76	4	26
Monte Lirio	13.38	16.46	18.46	15.46	4	30
Atlantic Sec.-						
Gatun	15.55	16.02	16.92	16.91	7	25
Brazos Brook	14.82	12.22	14.56	14.73	6	29
Colon	19.31	15.65	16.53	14.20	42	25
Porto Bello	8.70	9.54	13.78	9.82	4	24
Nombre de D.	18.17	5.61	10.12	11.30	3	26

Rainfall from October 1 to 31, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section	*Ins.*		*Ins.*
Ancon	4.47	9	10.90
Balboa	2.58	9	8.47
*Miraflores	2.00	18	9.71
Pedro Miguel	1.93	24	12.92
Rio Grande	2.34	5	16.65
Central Section—			
Culebra	2.64	1	17.06
*Camacho	2.91	1	18.81
Empire	2.15	1	14.97
Gamboa	1.76	21	12.75
*Juan Mina	2.03	21	12.26
Alhajuela	1.78	24	13.39
*El Vigia	1.68	24	14.13
*Gorgona	3.07	24	13.19
San Pablo	1.86	24	8.63
Tabernilla	2.41	24	10.86
Bohio	2.49	30	13.24
*Trinidad	1.94	25	15.56
*Monte Lirio	6.25	30	18.46
Atlantic Section—			
Gatun	2.42	24	16.92
*Brazos Brook	2.23	30	14.56
Colon	2.73	24	16.53
Porto Bello	2.67	2	13.78
*Nombre de Dios	3.50	30	10.12
*Bocas del Toro	2.66	18	10.44

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—value midnight to midnight.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, November 4, 1911. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Oct 29	127.0	93.4	46.4	17.5	17.3
Mon., Oct. 30	131.9	96.9	50.1	18.0	17.0
Tues., Oct. 31	128.0	94.6	49.2	18.3	17.6
Wed., Nov. 1	127.8	93.9	48.9	18.4	17.7
Thurs., Nov. 2	131.1	96.2	49.1	18.0	17.6
Fri., Nov. 3	136.4	99.7	52.4	19.4	17.8
Sat., Nov. 4	128.2	94.3	49.3	19.3	18.3
Height of low water	125.0	92.0	44.0		

WEATHER CONDITIONS, CANAL ZONE, OCTOBER, 1911.

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.	Date.		Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon	29.844	79.4	90	16	72	7	87	16.53	14.20	25	5,386	N.W.	28	N.E.	29
Culebra	29.837	78.9	92	16	69	26	93	17.06	11.60	25	3,491	N.W.	35	S.	3
Ancon	29.828	80.0	95	16	69	19	94	10.90	10.46	17	4,797	N.W.	38	S.E.	3

MOVEMENT OF OCEAN VESSELS.

NEW YORK TO CRISTOBAL.

Colon	P. R. R.	Monday	Nov.	6
Advance	P. R. R.	Saturday	Nov.	11
Panama	P. R. R.	Saturday	Nov.	18
Allianca	P. R. R.	Friday	Nov.	24
Colon	P. R. R.	Friday	Dec.	1
Advance	P. R. R.	Thursday	Dec.	7
Panama	P. R. R.	Thursday	Dec.	14
Allianca	P. R. R.	Wednesday	Dec.	20
Colon	P. R. R.	Wednesday	Dec.	27
Advance	P. R. R.	Tuesday	Jan.	2
Panama	P. R. R.	Tuesday	Jan.	9
Allianca	P. R. R.	Monday	Jan.	15
Colon	P. R. R.	Monday	Jan.	22
Advance	P. R. R.	Saturday	Jan.	27
Panama	P. R. R.	Saturday	Feb.	3
Allianca	P. R. R.	Friday	Feb.	9
Colon	P. R. R.	Friday	Feb.	16
Advance	P. R. R.	Friday	Feb.	23
Panama	P. R. R.	Thursday	Feb.	29

CRISTOBAL TO NEW YORK.

Allianca	P. R. R.	Saturday	Nov.	11
Colon	P. R. R.	Saturday	Nov.	18
Advance	P. R. R.	Friday	Nov.	24
Panama	P. R. R.	Friday	Dec.	1
Allianca	P. R. R.	Thursday	Dec.	7
Colon	P. R. R.	Wednesday	Dec.	13
Advance	P. R. R.	Wednesday	Dec.	20
Panama	P. R. R.	Wednesday	Dec.	27
Allianca	P. R. R.	Tuesday	Jan.	2
Colon	P. R. R.	Tuesday	Jan.	9
Advance	P. R. R.	Monday	Jan.	15
Panama	P. R. R.	Sunday	Jan.	21
Allianca	P. R. R.	Sunday	Jan.	28
Colon	P. R. R.	Saturday	Feb.	3
Advance	P. R. R.	Friday	Feb.	9
Panama	P. R. R.	Friday	Feb.	16
Allianca	P. R. R.	Thursday	Feb.	22
Colon	P. R. R.	Thursday	Feb.	29

NEW YORK TO COLON.

Metapan	U. F. C.	Thursday	Nov.	2
Prinz August Wilhelm	H.-A.	Saturday	Nov.	4
Zacapa	U. F. C.	Thursday	Nov.	9
Prinz Eitel Friedrich	H.-A.	Friday	Nov.	10
Trent	R. M.	Saturday	Nov.	11
Almirante	U. F. C.	Thursday	Nov.	16
Prinz Joachim	H.-A.	Saturday	Nov.	18
Santa Marta	U. F. C.	Thursday	Nov.	23
Prinz Sigismund	H.-A.	Friday	Nov.	24
Oruba	R. M.	Saturday	Nov.	25
Metapan	U. F. C.	Thursday	Nov.	30
Prinz August Wilhelm	H.-A.	Saturday	Dec.	2
Zacapa	U. F. C.	Thursday	Dec.	7
Prinz Eitel Friedrich	H.-A.	Friday	Dec	8
Magdalena	R. M.	Saturday	Dec.	9
Almirante	U. F. C.	Thursday	Dec.	14
Prinz Joachim	H.-A.	Saturday	Dec.	16
Santa Marta	U. F. C.	Thursday	Dec.	21
Prinz Sigismund	H.-A.	Friday	Dec.	22
Clyde	R. M.	Saturday	Dec.	23
Metapan	U. F. C.	Thursday	Dec.	28
Prinz August Wilhelm	H.-A.	Saturday	Dec.	30

COLON TO NEW YORK.

Prinz Sigismund	H.-A.	Saturday	Nov.	11
Oruba	R. M.	Tuesday	Nov.	14
Metapan	U. F. C.	Thursday	Nov.	16
Prinz August Wilhelm	H.-A.	Tuesday	Nov.	21
Zacapa	U. F. C.	Thursday	Nov.	23
Prinz Eitel Friedrich	H.-A	Saturday	Nov.	25
Magdalena	R. M.	Tuesday	Nov.	28
Almirante	U. F. C.	Thursday	Nov.	30
Prinz Joachim	H.-A	Tuesday	Dec.	5
Santa Marta	U. F. C.	Thursday	Dec.	7
Prinz Sigismund	H.-A.	Saturday	Dec.	9
Clyde	R. M.	Tuesday	Dec.	12
Metapan	U. F. C.	Thursday	Dec.	14
Prinz August Wilhelm	H.-A	Tuesday	Dec.	19
Zacapa	U. F. C.	Thursday	Dec.	21
Prinz Eitel Friedrich	H.-A.	Saturday	Dec.	23
Thames	R. M.	Tuesday	Dec.	26
Prinz Joachim	H.-A.	Tuesday	Jan.	2

NEW ORLEANS TO COLON.

Heredia	U. F. C.	Saturday	Nov.	4
Abangarez	U. F. C.	Wednesday	Nov.	8
Parismina	U. F. C.	Saturday	Nov.	11
Cartago	U. F. C.	Wednesday	Nov.	15
Turrialba	U. F. C.	Saturday	Nov.	18
Abangarez	U. F. C.	Wednesday	Nov.	29

COLON TO NEW ORLEANS.

Tivives	U. F. C.	Thursday	Nov.	9
Atenas	U. F. C.	Thursday	Nov.	9
Abangarez	U. F. C.	Thursday	Nov.	16
Heredia	U. F. C.	Thursday	Nov.	16
Cartago	U. F. C.	Thursday	Nov.	23
Parismina	U. F. C.	Thursday	Nov.	23

The Leyland Line steamship *Median* will sail for Port Limon and Texas City on November 19.

STATEMENT OF

CONSTRUCTION EXPENDITURES

TO SEPTEMBER 30, 1911

(Part II of The Canal Record, November 8, 1911.)

STATEMENT OF CONSTRUCTION EXPENDITURES TO SEPTEMBER 30, 1911.

Table No. 1.

Includes administrative and general expenses, but does not include general items or expenditures for sanitation, hospitals, or civil government.

Items.	First Quarter, Fiscal Year 1912.			To June 30, 1911			Total to Sept. 30, 1911.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
Atlantic Division—	*Cubic Yards.*			*Cubic Yards.*			*Cubic Yards.*		
1 Dry excavation, prism	197,653	$145,390.74	$0 7356	1,757,126	$1,184,637.53	$0.6742	1,954,779	$ 1,330,028.27	$0.6804
2 Hydraulic excavation, prism	1,000	2,806.55	2.8066	28,605	8,864.77	.3099	29,605	11,671.32	.3942
3 Dredging excavation, prism	1,212,085	313,580.32	.2587	23,972,128	5,647,574.78	.2356	25,184,213	5,961,155.10	.2367
Gatun Spillway—									
4 Dry excavation				1,544,202	1,096,180.59	.7099	1,544,202	1,096,180.59	.7099
5 Preparing foundations	2,221	6,819.43	3.0704	36,968	75,779.89	2.0499	39,189	82,599.32	2.1077
6 Masonry	14,635	106,725.30	7.2925	143,747	1,149,289.13	7.9952	158,382	1,256,014.43	7.9303
7 Ironwork		942.29			19,831.19			20,773.48	
8 Back filling	6,482	2,865.11	.4420	14,654	8,093.23	.5523	21,136	10,958.34	.5185
Total		$117,352.13			$2,349,174.03			$2,466,526.16	
Gatun Dam—									
9 Dredging excavation				38,425	$20,041.19	$0.5216	38,425	$20,041.19	$0.5216
10 Dry filling	628,919	$320,210.80	$0.5091	7,453,727	3,041,510.93	.4081	8,082,646	3,361,721.73	.4159
11 Hydraulic filling	846,174	311,666.45	.3683	7,909,615	2,095,449.24	.2649	8,755,789	2,407,115.69	.2749
12 Paving				40,411	14,719.69	.3642	40,411	14,719.69	.3642
Total		$631,877.25			$5,171,721.05			$5,803,598.30	
Gatun Locks—									
13 Dry excavation		*$3 337.87		4,555,395	$3,083,951.58	$0.6770	4,555,395	$3,080,613.71	$0.6763
14 Dredging excavation		16,880.31		488,533	92,711.42	.1898	488,533	109,591.73	.2243
15 Preparing foundations, excavation	8,888	26,347.06	$2.9643	186,425	363,241.90	1.9485	195,313	389,588.96	1.9947
16 Preparing foundations, filling	36,000	3,347.11	.0930	40,117	15,226.73	.3796	76,117	18,573.84	.2440
17 Preparing foundations, concrete piling, (lineal feet)	21,504	39,999.64	1.8601	8,196	18,764.75	2.2895	29,700	58,764.39	1.9786
18 Preparing foundations, wooden piling, (lineal feet)	21,745	18,816.39	.8653				21,745	18,816.39	.8653
19 Masonry	195,272	1,424,691.84	7.2959	1,424,940	10,263,770.12	7.2029	1,620,212	11,688,461.96	7.2142
20 Ironwork		108,280.12			980,862.46			1,089,142.58	
21 Backfilling	255,550	101,820.10	.3984	539,859	318,868.21	.5906	795,409	420,688.31	.5289
22 Filling center wall	6,791	8,772.50	1.2918	2,717	3,101.25	1.1414	9,508	11,873.75	1.2488
23 Operating machinery, installation		853.43						853.43	
Total		$1,746,470.63			$15,140,498.42			$16,886,969.05	
Gatun power plant, (permanent)									
Dry excavation	21,835	$13,711.63	$0.6280				21,835	$13,711.63	$0.6280
Gatun-Mindi Levee—									
25 Dry fill				177,158	$ 68,985.15	$.03894	177,158	$68,985.15	$0.3894
26 Hydraulic fill				20,398	3,483.32	.1708	20,398	3,483.32	.1708
Total					$72,468.47			$72,468.47	
27 Colon breakwater	128,278	$273,371.69	$2.1311	359,890	$665,382.65	$1.8488	488,168	$938 754.34	$1.9228
Total construction cost, Atlantic Division		$3,244,560.94			$30,240,321.70			$33,484,882.64	
28 Plant and equipment to be absorbed in construction costs after Sept. 30 1911								$2,930,450.28	
Total expenditures, Atlantic Division								$36,415,332.92	
Central Division—									
29 Dry excavation, prism	4,185,856	2,444,131.02	$0.5839	77,338,235	$66,992,606.52	$0.8662	81,524,091	69,436,737.54	$0.8517
30 Clearing Canal line, without excavation (acres)				2,280	139,316.41	61.1037	2,280	139,316.41	61.1037
31 Dredging excavation					9,798.40			9,798.40	
32 Masonry	107	1,461.78	13.5979	1 020	6,224.44	6 1024	1,127	7,686.22	6.8201
33 Masonry, cement gun facing (sq. yds.)	3,260	3,435.53	1.0538				3,260	3,435.53	1.0538
Total construction cost Central Division		$2,449,028.33			$67,147,945.77			$69,596,974.10	
34 Plant and equipment to be absorbed in construction costs after Sept. 30. 1911								$557,145.07	
Total expenditure, Central Division								$70,154,119.17	
Pacific Division—									
35 Dry excavation, prism	135,060	$96,812.61	$0.7168	437,943	$ 362,161.93	$0.8270	573,003	$458,974.54	$0.8010
36 Dredging excavation prism	1,395,613	235,355.10	.1686	28,586,972	7,046,255.17	.2465	29,982,585	7,281,610.27	.2429
37 Hydraulic excavation prism	285,987	149,981.39	.5244	197,677	129,802.26	.6566	483,664	279,783.65	.5785
Pedro Miguel Dam—									
38 Dry excavation				4,074	6,167.28	$1.5138	4,074	$6,167.28	$1.5138
39 Dry filling	43,729	14,810.88	$0.3387	260,852	126,001.82	.4830	304,581	140,812.70	.4623
Total		$14,810.88			$132,169.10			$146.979.98	
Pedro Miguel Locks—									
40 Dry excavation		$769.79		1,035,080	$998,706.11	$0.9649	1,035,080	$999,475.90	$0.9656
41 Preparing foundations	9,965	27,996.16	2.8094	121,795	346,198.59	2.8424	131,760	374,185.75	2.8399
42 Masonry	56,021	352,093.00	6.2850	665,056	3,590,785.64	5.3992	721,077	3,942,878.64	5.4680
43 Ironwork		42,706.87			519,401.06			562,107.93	
44 Back filling	55,467	32,014.53	.5772	283,325	118,389.54	.4179	338,792	150,404.07	.4439
45 Filling center wall	8,708	8,206.51	.9424				8,708	8,206.51	.9424
Total		$463,786.86			$5,573,471.94			$6,037,258.80	
Miraflores Dam—									
46 Dry filling	161,098	$64,780.65	$0.4021	816,499	$443,947.43	$0.5437	977,597	$508,728.08	$0.5204
47 Hydraulic filling		6,963.53			22,740.30			29,703.83	
48 Masonry, core wall					429.51			429.51	
49 Dry excavation				14,536	19,991.26	1.3753	14,536	19,991.26	1.3753
Total		$71,744.18			$487,108.50			$558,852.68	
Miraflores Spillway—									
50 Ironwork		$1,460.21						$1,460.21	

*Denotes credit.

Table 1—(*Continued.*)

ITEMS.	FIRST QUARTER, FISCAL YEAR, 1912.			TO JUNE 30, 1911.			TOTAL TO SEPT. 30, 1911.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
Miraflores Locks—									
51 Dry excavation, liversions				5,885	$2,028.98	.3448	5,885	$2,028.98	$0.3448
52 Dry excavation, in locks	279,208	$199,297.93	$0.7138	1,597,835	1,622,729.54	1.0156	1,877,043	1,822,027.47	.9707
53 Dredging excavation				390,647	142,379.66	.4598	309,647	142,379.66	.4598
54 Hydraulic excavation				332,703	195,299.02	.5870	332,703	195,299.02	.5870
55 Preparing foundations	7,937	23,634.84	2.9778	201,788	389,542.77	1.9305	209,725	413,177.61	1.9701
56 Masonry	145,926	696,530.29	4.7732	274,563	1377,270.28	5 0162	420,489	2,073,800.57	4.9319
57 Ironwork		71,280.93			543,027.96			614,308.89	
58 Backfilling	28,937	20,317.35	.7021	583,812	127,493.79	.2184	612,749	147,811.14	.2412
Total		$1,011,061.34			$4,399,772.00			$5,410,833.34	
LaBoca Locks and Dams—(abandoned)									
59 Dry excavation				78,233	$158,343.29	2.0240	78,233	$158,343.29	$2.0240
60 Construction, dam					315,350.07			315,350.07	
61 Construction, locks					159,306.40			159,306.40	
Total					$632,999.76			$632,999.76	
62 Naos Island breakwater		$667.27			$58,106.06			$58,773.33	
Total construction cost, Pacific Division		$2,045,679.84			$18,821,846.72			$20,867,526.56	
63 Plant and equipment to absorbed in construction costs after Sept. 30, 1911								$2,520,118.04	
Total expenditures, Pacific Division								$23,387,644.60	
Lighting and bouying canal		$18,603.87			$14,374.88			$32,978.75	
Total expenditures, constr. and engr'n'g								$129,990,075.44	

Item 27—*Colon Breakwater.* Figures shown include fill from Toro Point and large rock from Porto Bello.
Item 31—*Dredging Excavation, Prism.* Preliminary surveys.
Item 33—Operation of cement gun used in facing walls of Cut.
Item 36—*Dredging Excavation, Prism.* With the accounts for the month of April the total cost of the dredging plant had been absorbed into the work, hence no abitrary for plant is charged in this quarter.
Item 47—*Miraflores Dams, Hydraulic Filling.* Expenditures represent cost of pipe lines, flumes, etc. 639,098 cubic yards havebeen deposited in dams from dredging and hydraulic excavations in lock chamber and in the prism below the locks, the total expenditures therefor being charged to "Excavation".
Items 59, 60, and 61—These expenditures were incurred prior to the adoption of the Miraflores as the site for the lower locks and dams, at the Pacific entrance of the canal.
Items 28, 34, and 63—*Plant.* The expenditures for plant and equipment are absorbed into construction costs on the basis of estimated total cost of Plan and the estimated quantities of work to be done. The amounts shown under these items represent the balances which are to be absorbed into construction costs after September 30, 1911
General—When excavated material is used in filling, such as dams, back filling, etc., the cost of dumping only is charged to the items benefited, all other expenses be charged to "Excavation".

DAM CONSTRUCTION.

Table No. 2.

Detailed cost per cubic yard for quarter ending Sept. 30, 1911:

	GATUN DAM.				MIRAFLORES DAM.				PEDRO MIGUEL DAM.			
	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total
Dry Fill—Quanities—cubic yards	201,996	232,426	194,497	628,919	54,415	72,203	34,480	161,098	14,865	24,812	4,052	43,729
Clearing site	$0.0003	$0.0046	$0.0010	$0.0021								
Excavation	.0041	.0017	.0196	.0081								
Tracks	.0571	.0682	.0881	.0708	$0.0308	$0.0181	$0.0691	$0.0333	$0.0599	$0.0288	$0.5082	$0.0838
Trestles	.0039	.0057	.0007	.0036						.0003		.0002
Transportation	.1513	.1276	.1562	.1440	.0632	.0461	.1041	.0643		.0349	.1172	0307
Filling	.1284	.1285	.1290	.1286	.0678	.0564	.0940	.0683	.0161	.0272	.1804	.0376
Maintenance of equipment	.0281	.0313	.0384	.0325	.0216	.0213	.0594	.0295	.0503	.0150	.0649	.0316
Plant arbitrary	.1017	.0364	.0709	.0680	.1800	.1800	.1800	.1800	.1300	.1300	.1300	.1300
Division expense	.0178	0198	.0194	.0190	.0110	.0080	.0127	.0100	.0039	.0048	.0502	0087
Total division cost	$0.4927	$0.4238	$0.5233	$0.4767	$0.3744	$0.3299	$0.5193	$0.3854	$0.2602	$0.2410	$1.0509	$0.3226
Administrative and general expense	.0283	.0346	.0341	.0324	.0172	.0116	.0263	.0167	.0075	.0089	.0918	.0161
Total cost	$0.5210	$0.4584	$0.5574	$0.5091	$0.3916	$0.3415	$0.5456	$0.4021	$0.2677	$0.2499	$1.1427	$0 3387
Hydraulic Fill—Quanities—cubic yards	324,947	259,389	261,838	846,174								
Clearing site	$0.0003	$0.0046	$0.0010	$0.0019								
Clearing for dredge	.0080	.0138	.0164	.0124								
Dredging	.1044	.1215	.1052	.1099								
Relay pumps	0111	.0140	.0130	.0126								
Pipe lines	0328	0450	.0346	.0371								
Wood flumes	0043	.0053	.0036	.0044								
Power	.0613	.0828	.0675	.0698								
Small boats	.0018	.0025	.0021	.0020								
Maintenance of equipment	.0354	.0267	.0201	.0280								
Plant arbitrary	.0500	.0770	.0620	.0620								
Division expense	.0063	.0088	.0071	.0073								
Total division cost	$0.3157	$0.4020	$0.3326	$0.3474								
Administrive and general expense	.0185	.0243	.0206	.0209								
Total cost	$0.3342	$0.4263	$0.3532	$0.3683								

LOCKS AND SPILLWAYS CONSTRUCTION.

Table No. 3.

Detailed cost per cubic yard for quarter ending September 30, 1911:

Items.	Gatun Spillway.				Gatun Locks.				Pedro Miguel Locks.				Miraflores Locks.			
	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.
Dry excavation—Quantities—cubic yards													95,464	99,309	84,435	279,208
Drilling													$0.0747	$0.1072	$0.1115	$0.0974
Blasting													.0484	.0739	.0682	.0635
Loading by power													.0998	.1268	.1272	.1177
Tracks													.1387	.1033	.1166	.1195
Transportation													.0764	.0804	.0696	.0794
Dumps													.0331	.0299	.0142	.0262
Trestles																
Pumps													.0220	.0211	.0134	.0190
Power																
Maintenance of equipment													.0525	.0824	.0820	.0720
Plant arbitrary													.0600	.0208	.0400	.0400
Division expense													.0298	.0318	.0235	.0286
Total division cost													$0.6354	$0.6776	$0.6662	$0.6633
Admin. and general expense													.0509	.0509	.0496	.0505
Total cost													$0.6863	$0.7285	$0.7158	$0.7138
Preparing foundations, excavation—Quantities—cubic yards.	903	742	576	2,221	5,994	1,191	1,703	8,888	6,273	684	3,008	9,965	2,420	2,940	2,577	7,937
Drilling					$0.3009	$0.4204	$0.2948	$0.3157	$0.2586		$0.7304	$0.3833	$0.3420			$0.1043
Blasting					.2328	.2341	.0086	.1900	.0744		.2981	.1368	.4265			.1301
Loading by power	$0.1979	$0.4177	$0.4086	$0.3259	.0567	.0722		.0479	.1680			.1058				
Loading by hand	.8956	1.8574	2.0109	1.5062	.7793	2.7753	1.6571	1.2150	.5373	$3.8444	1.5619	1.0736	1.9883	1.6607	1.4140	1.6805
Transportation	.0410			.0167	.2382	.2002	.1383	.2139	.2094	.3988	.0864	1853	.3906	.2415	.1543	.2587
Tracks		0544	.1805	.0650	.0015	.0520	.0639	.0202	.4048	.1850	.2384	3395	0821	.0380	.2791	.1296
Dumps																
Pumps					0927	.5759		.1397	.0242	.0212	.0405	0289	.0218	.0211	.0522	.0314
Coffer dams	.2680	.8150	.0779	.4015												
Maintenance of equipment	.2173			.0883	.1322	.1125	.4738	.1950	.1071	3281	.2654	1700	1938	.1067	.3083	.1987
Plant arbitrary	.1190	.2986	2000	.2000	1190	.6076	.2000	.2000		.0006	0002	0001	0600	.0235	.0400	.0400
Division expense	.1314	.2516	2195	.1944	.1379	.3819	.1789	.1785	.1156	.3303	1567	1427	.2309	.1438	.1002	.1562
Total division cost	$1.8702	$3 6947	$3 0974	$2.7980	$2.0912	$5.4321	$3.0154	$2.7159	$1.8994	$5.1084	$3.3780	$2.5660	$3.7360	$2.2353	$2.3481	$2.7295
Admin. and general expense	.1779	.3500	.3206	.2724	.1909	.5193	.2612	.2484	.1901	.4668	.3039	.2434	.3479	.2028	.2067	.2483
Total cost	$2.0481	$4.0447	$3.4180	$3.0704	$2.2821	$5.9514	$3.2766	$2.9643	$2.0895	$5.5752	$3.6819	$2.8094	$4.0839	$2.4381	$2.5548	$2.9778
Preparing foundations, concrete piling—Quantities—lin. ft.					8,244	2,700	10,560	21,504								
Concrete piles in place					$1.9440	$1.8991	$1.5512	$1.7454								
Maintenance of equipment					.0409	.0053	.0148	.0237								
Division expense					.0220	.0155	.0225	.0214								
Total division cost					$2.0069	$1.9199	$1.5885	$1.7905								
Admin. and general expense					.0481	.2549	.0390	.0696								
Total cost					$2.0550	$2.1748	$1.6275	$1.8601								
Preparing foundations filling—Quanities—cubic yards							36,000	36,000								
Filling							$0.0930	$0.0930								
Total cost							$0.0930	$0.0930								
Preparing foundations, wooden piling—Quanities—lin. ft.						8,845	12,900	21,745								
Wooden piles in place						$0.7339	$0.7462	$0.7412								
Maintenance of equipment						.0016	.0075	.0051								
Division expense						.0097	.0050	.0069								
Total division cost						$0.7452	.7587	$0.7532								
Admin. and general expense						.0654	.1441	.1121								
Total cost						$0.8106	$0.9028	$0.8653								
Masonry.																
Concrete—Quantities—cubic yds.	5,935	5,050	3,650	14,635	64,199	59,332	51,650	175,181	16,410	19,708	14,740	50,858	32,840	56,890	56,013	145,743
Cement	$1.5698	$1.5662	$1.6344	$1.5847	$1.5563	$1.5729	$1.5648	$1.5644	$1.7184	$1.7491	$1 8285	$1.7622	$1.8287	$1.7500	$1.6912	$1.7451
Stone	1.6568	2.0334	1.8485	1.8346	1.9915	2.2000	2.1484	2.1084	.7905	.7719	.7626	.7752	.7905	.7719	.7658	.7737
Sand	.6471	.8037	.7958	.7382	.8365	.9811	.9461	.9178	.3995	.3995	3948	.3982	.3995	.3995	.3966	.3984
Mixing	.1824	.2738	.3358	.2522	.1335	.1446	.1541	.1433	.3215	.3378	.3285	3298	.2984	.1850	.2142	.2218
Total cost	$4.0561	$4.6771	$4.6145	$4.4097	$4.5178	$4.8986	$4.8134	$4.7339	$3.2299	$3 2583	$3 3144	$3 2654	$3.3171	$3.1064	$3.0678	$3.1390
Large Rock—Quantities—cubic yards					5,370	4,416	1,634	11,420								
Cost					$0.7806	$1.2564	$1.1203	$1.0132								
Masonry—Quantities—cubic yards	5,935	5,050	3,650	14,635	69,569	63,748	53,284	186,601	16,410	19708,	14,740	50,858	32,840	56,890	56,013	145,743
Concrete	$4.0561	$4.6771	$4.6145	$4.4097	$4.1690	$4.5593	$4.6658	$4.4442	$3.2299	$3.2583	$3 3144	$3.2654	$3.3171	$3.1064	$3.0678	$3.1390
Large rock					.0603	.0870	.0344	.0620								
Wood forms	.5037	1 0274	1.0702	.8257	.4265	.4774	.3698	.4277	.5399	.5315	.7801	.6063	.4354	.3098	.3413	.3502
Steel forms					.1302	.1287	.1506	.1355	.0057	.0016	.0136	.0064	.0586	.0413	.0406	.0450
Placing	.4808	.7184	.8467	.6540	.3240	.3632	.3725	.3513	.5688	.5019	.5890	.5487	.1923	.1695	.1488	.1667
Reinforcements	.0622	.2295	.0528	.1176	.0083	.0244	.0157	.0158	.0597			.0193	.0262		.0079	.0089
Pumps					.0719	.0968	.0831	.0836	.0293	.0204	.0405	.0291	.0175	.0175	.0670	.0365
Power					.0425	.0473	.0751	.0535	.0444	.0275	0259	0325	.0468	.0366	.0235	.0339
Coffer dams	.0136	.0399	.0041	.0202												
Maintenance of equipment	.2238	.2225	.2533	.2307	.2001	.1771	.1637	.1818	.1962	1646	.1843	1805	.2163	.1780	.1294	.1679
Plant arbitrary	.4670	.3126	.3960	.3960	7110	1.0644	.8800	.8800	1.0228	1.0189	1.0204	1.0206	.5310	.5305	.5305	.5306
Division expense	.0918	.1392	.1560	.1242	.0821	.1033	.0874	.0909	.1238	.1099	.1085	.1140	.0916	.0631	.0548	.0664
Total division cost	$5.8990	$7.3666	$7.3936	$6.7781	$6 2259	$7.1289	$6.8981	$6.7263	$5.8205	$5.6346	$6 0767	$5.8228	$4.9328	$4.4527	$4.4116	$4.5451
Admin. and general expense	.3067	.5286	.5214	.4368	.1983	.2270	.1967	.2076	.3362	.2548	.3063	.2959	.2931	.1900	.1979	.2163
Total cost	$6.2057	$7.8952	$7.9150	$7.2149	$6.4242	$7.3559	$7.0948	$6.9339	$6.1567	$5.8894	$6.3830	$6.1187	$5.2259	$4.6427	$4.6095	$4.7614

Table No. 3—(*Continued*)

Items.	Gatun Spillway.				Gatun Locks.				Pedro Miguel Locks.				Miraflores Locks.			
	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.
Masonry, reinforced—Quantities—cubic yards					1,477	3,180	4,014	8,671	3,496	1,028	639	5,163		113	70	183
Cement					$2.2820	$2.2500	$2.2040	$2.2340	$2.4104	$2.3802	$2.3232	$2.3936		$3.0512	$2.3306	$2.7729
Stone					1.9997	2.3353	1.9788	2.1131	.7564	.7380	.7302	.7495		.7419	.7263	.7359
Sand					.7548	1.0054	.9010	.9144	.3739	.3737	.3694	.3733		.3761	.3720	.3745
Mixing					1.5547	1.1060	.5568	.9282	.1801	.5246	.4722	2848		.1536	.1666	.1586
Wood forms					5.0664	3.5433	4.1322	4 0754	.5849	1.2848	4.1201	1.1618		5.4028	9.3954	6.9301
Steel forms					.5233	.2012	.2005	.2557								
Power									.0011	.0015	.0056	.0017			.0310	.0145
Placing					.7727	.7264	.6528	.7003	.1291	.2719	.9490	.2590		1887	.3540	.2519
Reinforcements					1.9732	.6520	1.3569	1.2034	.6803	1.8411	1.4251	1.0036			1.0724	.4102
Pumps							.0209	.0097		.0204	.0405	.0091		.0174	.0521	.0307
Maintenance of equipment					.0942	.0716	.2221	.1451		.0633	.1016	.0252		.1904	.1074	.1586
Plant arbitrary					.7110	.9585	.8800	.8800	1.0228	1.0006	1.0156	1.0175		.5300	.5300	.5300
Division expense					.4879	.3864	.3258	.3756	.1166	.2382	.3612	.1711		.5144	1.1836	.7704
Total division cost					16.2199	13 2361	13.4318	13.8349	$6.2556	$8.7383	11.9137	$7.4502		11.1665	16.3214	13.1383
Admin. and general expense					1.7526	1.1013	1.1841	1.2506	.3875	.5171	.8676	.4727		.8459	1.3550	1.0407
Total cost					17.9725	14.3374	14.6159	15.0855	$6.6431	$9.2554	12.7813	$7 9229		12.0124	17.6764	14.1790
Total Masonry—Quantities—cubic yards	5,935	5,050	3,650	14,635	71,046	66,928	57,298	195,272	19,906	20,736	15,379	56,021	32,840	57,003	56,083	145,926
Total cost	$6.2057	$7.8952	$8 2257	$7.2925	$6 6643	$7 6876	$7 6217	$7.2959	$6.2421	$6.0563	$6 6489	$6.2850	$5 2259	$4 6573	$4 6258	$4.7732
Back filling—Quantities—cubic yards	770		5,712	6,482	62,641	78,650	114,259	255,550	13,707	18,786	22,974	55,467	340	6,117	22,480	28,937
Drilling						$0.0047	$0.0034	$0.0030								
Blasting					$0.0034	.0165	.0065	.0088								
Loading	$0.0499			$0.0058	.0194	.0196	.0095	.0150								
Tracks	.2488		$0.1152	.2350	.1358	.1332	.0840	1119	$0 1749	$0.0835	$0.1138	$0.1186	$4.9329	$0.3570	$0.0628	$0.1822
Transportation	.0977		.0622	.0665	.0361	.0388	.0361	.0370	.1224	0700	.0587	.0783		.0276	.1008	.0841
Filling			.0548	.0834	.1451	.1048	.0616	.0953	.2112	.1587	.1509	.1685	6 6555	.1707	.1324	.2172
Maintenance of equipment	.0400		.0117	.0151	.0834	.0183	.0222	.0360	.0472	.0327	.0346	.0371		.0069	.0495	.0399
Plant arbitrary					.0254	.0649	.0192	.0348	.1100	.1100	.1100	.1100	.1100	.1100	.1100	.1100
Division expense	.0307		0177	.0278	.0240	.0262	.0156	.0209	.0376	.0230	.0192	.0250	.3842	.0328	.0161	.0240
Total division cost	$0.4671		$0.2616	$0.3985	$0.4726	$0.4270	$0.2581	$0.3627	$0.7033	$0.4779	$0.4872	$0.5375	12.0826	$0.7050	$0.4716	$0.6574
Admin. and general expense	.0497		.0259	.0435	.0509	.0414	.0236	.0357	.0571	.0318	.0358	.0397	.7982	.0529	.0312	.0447
Total cost	$0.5168		$0.2875	$0.4420	$0.5235	$0.4684	$0.2817	$0.3984	$0 7604	$0.5097	$0.5230	$0.5772	12.8808	$0 7579	$0 5028	$0.7021
Filling center wall—Quantities—cubic yards					400	200	6,191	6,791	998	3,302	4,408	8,708				
Loading																
Tracks					$0.0271			$0.0016			$0.1555	$0.0787				
Transportation							$0.0389	.0355		$0.0300	.0166	.0198				
Filling					3.6623	$1.5948	.7137	9133	$0.2618	.9183	.3773	.5692				
Power										.0106	.0082	.0081				
Maintenance of eqiupment							.0081	.0073		.0406	.0709	.0513				
Plant arbitrary						.6510	.2170	.2170	.1100	.1187	.1161	.1164				
Division expense					.1521	.0586	.0409	.0480		.0502	.0381	.0384				
Total division cost					$3.8415	$2.3044	$1.0186	$1.2227	$0.3718	$1.1684	$0.7827	$0.8819				
Admin. and general expense					.2074	.0808	.0597	.0691		.0675	.0690	.0605				
Total cost					$4.0489	$2.3852	$1.0783	$1.2918	$0.3718	$1.2359	$0.8517	$0.9424				

DRY EXCAVATION—PRISM.

Table No. 4.

Detailed cost per cubic yard for quarter ending September 30, 1911:

Items.	Atlantic Division.				Central Division.				Pacific Division.			
	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.
Dry excavation—Quantities—cubic yards	58,125	65,041	74,487	197,653	1,337,833	1,442,402	1,340,173	4,120,408	43,799	54,164	37,097	135,060
Drilling	$0 0438	$0.0341	$0.0041	$0.0257	$0.0556	$0.0625	$0.0533	$0.0573	$0.0542	$0.0311	$0.0365	$0.0400
Blasting	.1225	.0779	.0421	.0775	0656	.0682	.0696	.0678	.0343	.0184	.0128	.0221
Loading	.0791	.0453	.0444	.0549	.0496	.0458	.0539	.0497	1248	.1014	.2112	.1392
Tracks	.0966	.0707	.0841	.0834	0858	.0906	.1323	.1026	.1482	.1072	.1355	.1283
Transportation	.1410	.1337	.1268	.1332	.0740	.0717	.0610	.0690	0830	.0657	.0593	.0695
Dumps					.0460	.0525	.0447	.0479	.0226	.0196	.0260	.0223
Pumps		.0115	.0204	.0115	.0044	.0049	.0037	.0043	.0224	.0212	.0367	.0258
Maintenance of equipment	.0744	.1330	.0426	.0817	0814	.0831	0844	0829	.0489	.0659	.0891	.0668
Plant arbitrary	.1190	.2724	.2000	.2000	0500	.0500	.0500	.0500	.1300	.1303	.1301	.1301
Division expense	.0238	.0238	.0175	.0214	0155	.0167	.0154	.0159	.0288	.0232	.0279	.0263
Total division cost	$0 7002	$0.8024	$0 5820	$0.6893	$0 5279	$0.5460	$0.5683	$0.5474	0.6972	$0.5840	$0.7651	$0.6704
Administrative and general expense	.0615	.0476	.0332	0463	0437	.0369	.0405	.0403	.0502	.0364	.0562	.0464
Total cost	$0 7617	$0 8500	$0.6152	$0.7356	$0 5716	$0 5829	$0.6088	$0 5877	0 7474	$0 6204	$0.8213	$0.7168
Dry excavation—Prism, by contract—Quantities—cubic yards					22,284	21,892	21,272	65,448				
Contract cost					$0.2888	$0 3048	$0 3007	$0 2980				
Plant arbitrary					0500	.0500	.0500	.0500				
Total cost					$0 3388	$0.3548	$0 3507	$0 3480				
Total dry excavation—Quantites—cubic yards	58,125	65,041	74,487	197,653	1,360,117	1,464,294	1,361,445	4,185,856	43,799	54,164	37,097	135,060
Unit cost	$0.7617	$0.8500	$0 6152	$0 7356	$0.5678	$0.5795	$0 6048	$0 5839	$0.7474	$0.6204	$0.8213	$0.7168

DREDGING EXCAVATION—PRISM.

Table No. 5.

Detailed cost per cubic yard for quarter ending Sept. 30, 1911:

Items.	Atlantic Division.								Pacific Division.*							
	July.		August.		September.		Total.		July.		August.		September.		Total.	
	Quantities, cu. yds.	Unit cost	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.
Pipe lines	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Dykes	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Clearing	......	......	......	......	420,434	$0.0016	1,212,085	$0.0006	......	......	......	......	......	......	......	......
Op'n, seagoing suction dredge	298,778	$0.0399	265,542	$0.0384	293,621	0312	857,941	.0365	189,565	$0.0600	212,002	$0.0544	259,755	$0.0381	661,322	$0.0497
R'p'rs, seagoing suction dredge	298,778	.0024	265,542	.0051	293,621	.0026	857,941	.0033	189,565	.0147	212,002	.0220	259,755	.0087	661,322	.0147
Operation, ladder dredges	88,300	.0825	61,212	0907	66,304	0638	215,816	.0791	181,355	.0501	225,884	.0488	185,775	.0514	593,014	.0500
Repairs, ladder dredges	88,300	.2098	61,212	1393	66,304	1218	215,816	.1627	181,355	.0112	225,884	.0134	185,775	.0303	593,014	.0180
Operation, dipper dredges	37,117	.1329	40,702	.1131	60,509	1140	138,328	.1188	80,000	0519	42,429	.0790	18,848	.2401	141,277	.0852
Repairs, dipper dredges	37,117	.4367	40,702	.3132	60,509	1094	138,328	.2572	80,000	0418	42,429	.0780	18,848	.0492	141,277	.0563
Operation, pipe line dredges	......	......		......	......	......	......	......	......	......	......	......	......	......	......	......
Repairs, pipe line dredges	......	......		......	......	......	......	......	......	......	......	......	......	......	......	......
Op'n, tugs, clapets and scows	125,417	.0822	101,914	0912	126,813	.0625	354,154	.0778	261,355	.0576	268,313	.0638	204,623	.0663	734,291	.0623
R'p'rs, tugs, clapets, and scows	125,417	.0394	101,914	.0492	126,813	.0347	354,154	.0406	261,355	.0150	268,313	.0195	204,623	.0223	734,291	.0187
Drilling	24,725	.1129	43,300	0800	39,540	.1062	107,565	.0972	5,675	......	13,425	......	21,187	......	40,287	......
Blasting	24,725	.2634	43,300	1605	39,540	1686	107,565	.1871	5,675	.2732	13,425	......	21,187	......	40,287	.0385
Operation, drill barges	......	......	......	......	......	......	......	......	5,675	2.1615	13,425	.7558	21,187	.4788	40,287	.8081
Operation, rock breakers	......	......	......	......	......	......	......	......	5,675	.2382	13,425	.0849	21,187	.0497	40,287	.0880
Small boats	424,195	.0026	367,456	.0039	420,434	.0039	1,212,085	.0024	450,920	0025	480,315	.0028	464,378	.0020	1,395,613	.0024
Repairs, misc. equipment	424,195	.0031	367,456	0004	420,434	.0037	1,212,085	.0025	450,920	.0038	480,315	.0045	464,378	.0029	1,395,613	.0038
Plant arbitrary	424,195	.0610	367,456	0265	420,434	.0450	1,212,085	.0450	450,920	......	480,315	......	464,378	......	1,395,613	......
Division expense	424,195	.0074	367,456	0087	420,434	0067	1,212,085	.0075	450,920	.0055	480,315	.0060	464,378	.0042	1,395,613	.0052
Total division cost	424,195	$0.2744	367,456	$0 2228	420,434	$0.2079	1,212,085	$0.2357	450,920	$0 1602	480,315	$0.1601	464,378	$0.1429	1,395,613	$0.1544
Admin. and general expense	424,195	.0236	367,456	.0292	420,434	.0170	1,212,085	.0230	450,920	.0157	480,315	.0137	464,378	.0133	1,395,613	.0142
Total cost	424,195	$0.2980	367,456	$0.2520	420,434	$0.2249	1,212,085	$0.2587	450,920	$0.1759	480,315	$0.1738	464,378	$0.1562	1,395,613	$0.1686
Earth excavation—per cent	399,470	94.17	324,156	88.22	380,894	90.60	1,104,520	91.13	445,245	98.74	466,890	97.20	443,191	95.44	1,355,326	97.11
Rock excavation—per cent	24,725	5.83	43,300	11.78	39,540	9 40	107,565	8 87	5,675	1.26	13,425	2.80	21,187	4 56	40,287	2.89

NOTE—*The total cost of the Dredging Plant had been absorbed at the close of April, hence no charge appears for this quarter.

STONE PRODUCTION.

Table No. 6.

Detailed cost per cubic yard for quarter ending September 30, 1911:

	Porto Bello Quarry.				Ancon Quarry.			
	July.	Aug.	Sept	Total.	July.	Aug.	Sept.	Total.
Quarrying—Quantities—cubic yards	43,352	41,826	44,352	129,530	61,362	58,962	63,426	*185 121
Stripping	$0.0079	$0.0216	$0.0106	$0.0132	$0.0217	$0.0309	$0.0226	$0.0248
Drilling	.0587	.0636	.0465	.0561	.0473	.0572	.0527	.0520
Blasting	.1181	.2744	.2142	.2015	.0508	.0340	.0449	.0430
Loading	.1018	.0923	.0833	.0924	.0389	.0382	.0382	.0382
Transportation	0814	.0851	.0793	.0819	.0565	.0580	.0476	.0534
Tracks	.0400	0334	.0198	.0309	.0229	.0163	.0222	.0204
Power	.0274	.0398	.0409	.0360	......	......	......	......
Maintenance of equipment	.0417	.0799	.0756	.0657	.0327	.0452	.0396	.0388
Plant arbitrary	.3300	.5072	.4170	.4170	.2400	.2400	.2400	.2400
Total	$0.8070	$1.1973	$0.9872	$0.9947	$0 5108	$0.5198	$0.5078	$0.5106
Crushing—Quantities—cubic yards	43,352	41,826	44,352	129,530	61 362	58,962	63,426	185,121
Operation, crushers	$0.0644	$0.0331	$0.0266	$0.0413	$0.0184	$0.0209	10.0155	$0.0180
Stone bins and conveyors	.0468	.0168	.0120	.0253	.0042	.0047	.0038	.0042
Power	.0509	.0512	.0525	.0515	.0183	.0172	.0166	.0173
Maintenance of equipment	1702	.1303	.0769	.1254	.0773	.0175	.0265	.0403
Plant arbitrary	.1700	.2616	.2150	.2150	.0739	.0742	.0740	.0740
Total	$0.5023	$0.4930	$0.3830	$0.4585	$0.1921	$0.1345	$0.1364	$0.1538
Total cost of production	$1.3093	$1.6903	$1.3702	$1.4532	$0.7029	$0.6543	$0.6442	$0.6644
Towing—Quantities—cubic yards	43,352	41,826	44,352	129,530	......	......	......	......
Operation, tugs and barges	$0.1645	$0.1843	$0.1662	$0.1715	......	......	......	......
Maintenance of equipment	.0844	.1480	.0690	.0996	......	......	......	......
Plant arbitrary	.1710	.2748	.2220	.2220	......	......	......	......
Total	$0.4199	$0.6071	$0.4572	$0.4931	......	......	......	......
Unloading—Quantities—cubic yards	43,352	41,826	44,352	129,530	......	......	......	......
Operation, cableways and cranes	$0.1270	$0.1148	$0.0957	$0.1123	......	......	......	......
Power	.0249	.0218	.0182	.0217	......	......	......	......
Maintenance of equipment	.0628	.1038	.0429	0692	......	......	......	......
Plant arbitrary	.2070	.3312	.2680	.2680	......	......	......	......
Total	$0.4217	$0.5716	$0.4248	$0 4712	......	......	......	......
Rail transportation to storage—Quantities—cubic yards	17,292	18,950	17,730	53,972	61,362	58,962	63,426	185,121
Operation of trains	$0.1093	$0.0954	$0.1017	$0.1019	$0.0422	$0.0402	$0.0380	$0.0398
Repairs to tracks	.0045	.0055	.0083	.0061	.0024	.0033	......	.0019
Dumping in storage	......	......	......	......	.0098	.0090	.0084	.0090
Maintenance of equipment	.0670	.0768	.0669	.0704	.0124	.0161	.0190	.0157
Plant arbitrary	......	......	......	......	.0700	.0700	.0700	.0700
Total	$0.1808	$0.1777	$0.1769	$0 1784	$0.1368	$0.1386	$0.1354	$0.1364
Division expense	$0.0406	$0.0438	$0.0325	$0.0389	$0.0206	$0.0199	$0.0141	$0.0180
Total cost in storage	$2.2636	$2.9934	$2.3554	$2.5307	$0.8603	$0.8128	$0.7937	$0.8188

*NOTE—Under "Total Quantities" 1,371 cubic yards have been added, to adjust the difference between cross section measurements of stock pile and book balance. This amount was not added to monthly quantities.

SAND PRODUCTION.

Table No. 7.

Detailed cost per cubic yard for quarter ending Sept. 30, 1911:

ITEMS.	Nombre de Dios.				Chame.			
	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.
Dredging—Quantities—cubic yards	24,512	27,818	32,401	84,731	33,914	41,029	39,863	114,806
Operation, dredges	$0.2753	$0.2058	$0.1769	$0.2149	$0.1294	$0.0852	$0.0960	$0.1020
Maintenance of equipment	.0295*	.0113	.0524	.0152	.0454	.0972	.0403	.0621
Total	$0.2458	$0.2171	$0.2293	$0.2301	$0.1748	$0.1824	$0.1363	.$01641
Plant arbitrary	$0.4800	$1.0613	$0.7890	$0.7890	$0.0300	$0.0300	$0.0300	$0.0300
Total cost of production	$0.7258	$1.2784	$1.0183	$1.0191	$0.2048	$0.2124	$0.1663	$0.1941
Towing—Quantities—cubic yards	24,512	27,818	32,401	84,731	33,914	41,029	39,863	114,806
Operation, tugs and barges	$0.2297	$0.2244	$0.2240	$0.2257	$0.1289	$0.1084	$0.1051	$0.1133
Maintenance of equipment	.0838	.1630	.1251	.1257	.0692	.0558	.0512	.0582
Plant arbitrary	.2110	.3446	.2820	.2820	.0600	.0417	0500	0500
Total	$0.5245	$0.7320	$0.6311	$0.6334	$0.2581	$0.2059	$0.2063	$0.2215
Unloading—Quantities—cubic yards	24,512	27,818	32,401	84,731	33,914	41,029	39,863	114,806
Operation, cableways and cranes	$0.1123	$0.1185	$0.0961	$0.1081	$0.0796	$0.0635	$0.0652	$0.0689
Power	.0153	.0235	.0217	.0205	.0309	.0253	.0259	.0271
Maintenance of equipment	.0605	.1104	.0472	.0718	.0137	.0552	0582	.0440
Plant arbitrary	.1620	.2654	.2170	.2170	.1036	.0667	.0833	.0834
Total	$0.3501	$0.5178	$0.3820	$0.4174	$0.2278	$0.2107	$0.2326	$0.2234
Rail Transportation to Storage—Quantities—cubic yards	11,553	13,432	11,743	36,728	33,914	41,029	39,863	114,806
Operation of trains	$0.1093	$0.0954	$0.1017	$0.1018	$0.0550	$0.0463	$0.0432	$0.0479
Repairs to tracks	.0045	.0055	.0083	.0060	.0630	.0273	0384	0417
Dumping in storage	....	....	....	....	.0179	.0132	.0125	.0143
Maintenance of equipment	.0670	.0768	.0669	.0706	.0167	.0192	.0220	.0194
Plant arbitrary	....	....	....	....	.0900	.0900	.0900	.0900
Total	$0.1808	$0.1777	$0.1769	$0.1784	$0.2426	$0.1960	$0.2061	$0.2133
Division expense	$0.0122	$0.0115	$0.0085	$0.0105	$0.0191	$0.0134	$0.0116	$0.0144
Total lost in storage	$1.6977	$2.6255	$2.1040	$2.1577	$0.9524	$0.8384	$0.8229	$0.8667

*Indicates credit.

HYDRAULIC EXCAVATION—PRISM.

Table No. 8.

ITEMS.	Atlantic Division.				Pacific Division.			
	July.	Aug.	Sept.	Total.	July.	Aug.	Sept.	Total.
Quantities—cubic yards	1,000	....	....	1,000	69,772	149,926	66,289	285,987
Drilling	....	....	....	....	....	....	$0.0229	$.0053
Blasting	....	....	....	....	....	....	0394	.0092
Pumping station	....	....	....	....	$0.0792	$0.0490	.0902	.0659
Pipe lines and monitors	....	....	....	....	.0629	.0573	.0706	.0618
Dredging pumps	$2.4430	....	....	$2.4430	.0622	.0125	.0623	.0361
Relay pumps	....	....	....	....	....	....	....	....
Dykes	....	....	....	....	....	.0096	.0939	.0268
Maintenance of equipment	....	....	....	....	.0886	.0612	1000	.0769
Power	....	....	....	....	1421	.0794	.1317	.1068
Plant arbitrary	....	....	....	....	.1001	.0966	.1012	.0985
Division expense	.1546	....	....	.1546	.0141	.0081	.0162	.0114
Total division cost	$2.5976	....	....	$2.5976	$0.5492	$0.3737	$0.7284	$0.4987
Administrative and general expense	.2090	....	....	.2090	.0307	.0160	.0425	.0257
Total cost	$2.8066	....	....	$2.8066	$0.5799	$0.3897	$0.7709	$0.5244

MANUFACTURING CONCRETE PILES.

Table No. 9.

ITEMS.	Atlantic Division.			
	July.	August.	September.	Total.
Quantities—lineal feet	1,500	750	10,455	12,705
Cement	$0.0860	$0.0960	$0.0799	$0.0816
Stone	.0671	.0820	.0679	.0686
Sand	.0178	.0092	0085	.0097
Mixing	.0511	.2083	.0789	.0832
Placing	.0744	.1348	.0436	.0527
Reinforcements	1.0581	.7729	.6990	.7457
Forms	.2320	.1292	.0829	.1032
Maintenance of equipment	.0410	.0158	.0005	.0062
Plant arbitrary	.1700	.2030	.1810	.1810
Division expense	.0624	.0502	.0207	.0274
Total cost	$1.8599	$1.7014	$1.2629	$1.3593

COLON BREAKWATER.

Table No. 10.

Items.	Colon Breakwater.			
	July.	Aug.	Sept.	Total.
Toro Point Fill.				
Excavation—Quantities—Cubic yards	46,179	44,958	33,813	124,950
Surveys	....	....	....	....
Clearing	....	....	....	....
Drilling	$0 0221	$0.0204	$0.0058	$0.0171
Blasting	.1647	.1481	.0625	.1311
Loading by power	0631	.0933	.1339	.0931
Tracks	.0647	.0435	.0442	.0515
Transportation	.0940	.0898	.0944	.0926
Maintenance of equipment	.0765	.0725	.0364	.0642
Total	$0.4851	$0.4676	$0.3772	$0 4496
Filling—Quantities—Cubic yards	46,179	44,958	33,813	124,950
Trestles	$1.1696	$0.9154	$0.6741	$0.9440
Dumping	.0082	.0084	.0119	.0093
Maintenance of equipment	.0220	.0066	.0175	.0152
Total	$1.1998	$0.9304	$0.7035	$0 9685
Plant arbitrary	$0.1690	$0.4548	$0.3100	$0.3100
Division expense	.0340	.0381	.0388	.0368
Tug service	.0663	.0844	.0793	.0764
Total division cost	$1 9542	$1.9753	$1.5088	$1.8413
Administrative and general expenses	.1398	.2446	.1642	.1840
Total cost filling	$2.0940	$2.2199	$1.6730	$2.0253
Porto Bello Large Rock.				
Quarrying—Quantities—cubic yards	....	506	2,822	3,328
Stripping	....	$0.1034	$0.0016	$0.0171
Drilling	....	1.1407	.4178	.5277
Blasting	....	.5438	.9227	.8651
Loading	....	.9001	.3021	.3930
Porto Bello Large Rock—*Continued.*				
Transportation	....	.2041	.2337	.2292
Tracks	....	1.1411	.2277	.3666
Loading on barges	....	.0336	.1486	.1311
Power	....	.7305	.1430	.2323
Maintenance of equipment	....	.9228	.6375	.6809
Plant arbitrary	....	.2690	.2690	.2690
Total	....	$5.9891	$3.3037	$3.7120
Towing—Quantities—cubic yards	....	506	2,822	3,328
Operation, tugs and barges	....	$0.7817	$0.2690	$0.3470
Maintenance of equipment	....	.1691	.0298	.0509
Plant arbitrary	....	.4930	.4930	.4930
Total	....	$1.4438	$0.7918	$0.8909
Placing—Quantities—cubic yards	....	506	2,822	3,328
Operation, cranes	....	$0.4647	$0.2807	$0.3087
Operation, trains	....	.4447	.1172	.1670
Maintenance of equipment	....	0814	.0309	.0378
Plant arbitrary	....	.1400	.1400	.1400
Total	....	$1.1308	$0.5679	$0.6535
Division expense	....	$0.4847	$0.1877	$0.2329
Total division cost	....	$9.0484	$4.8511	$5.4893
Administrative and general expense	....	1.2386	.4995	.6118
Total cost, large rock	....	$10.2870	$5.3506	$6.1011
Total material placed—Quantities—cubic yds	46,179	45,464	36,635	128,278
Total cost	$2.0940	$2.3097	$1.9290	$2.1311

PERMANENT POWER HOUSE—GATUN.

Table No. 11.

	July.	Aug.	Sept.	Total.
Excavation—Quantities—cubic yards	....	20,625	1,210	21,835
Clearing	....	$0.0034	$0.0074	$0.0036
Drilling	....	....	.2861	.0159
Blasting	....	....	.0275	.0015
Loading	....	.0313	.0486	.0323
Tracks	....	.0676	.5043	.0918
Transportation	....	.1392	.0751	.1356
Maintenance of equipment	....	.0958	.0505	.0934
Plant arbitrary	....	.2000	.2000	.2000
Division expense	....	.0171	.0752	.0203
Total division cost	....	$0.5544	$1.2747	$0.5944
Administrative and general expense	....	.0290	.1122	.0336
Total cost	....	$0.5834	$1.3869	$0.6280

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, NOVEMBER 15, 1911. No. 12.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Dredge Corozal Accepted.

It has been decided to accept the 1000-yards-an-hour ladder or elevator dredge *Corozal*, upon the report of the test it has undergone in Scotland. This is the dredge built on the Clyde for excavation in the Pacific entrance of the Canal and for maintenance work.

Erecting Lock Gates.

The work of erecting the upper guard gates in the twin locks at Gatun has been completed and the riveting on these gates is about fifty per cent finished. The gates will probably be hung and swung back against the walls in December, at which time they will be entirely completed, except for putting a concrete walk, with handrail, on top of each, and making the final adjustments and connections for the electric operating machinery. The gate erection now underway at Gatun is that of the upper operating gates, both flights.

At Pedro Miguel, the upper guard gates in both chambers are 80 per cent in place, and the upper operating gates in the east chamber about 35 per cent. A new erection bridge and a new crane, for the McClintic-Marshall Construction Company, have arrived, and will be placed over the location of the lower operating gates at Pedro Miguel. When the bridge and crane now in use at Pedro Miguel have completed their work on the upper operating and guard gates they will be moved to Miraflores, leaving the rest of the gate construction at Pedro Miguel to be done with the new bridge and crane.

On November 1, of the 50,000 tons of structural iron required for all the gates of the canal, 15,000 tons had arrived on the Isthmus and 3,000 tons had been erected.

Nombre de Dios and Chame Sand Service.

Sand dredging at Nombe de Dios will be discontinued about November 15. The storage pile at Gatun, which contains about 80,000 cubic yards, will be left full, and when sufficiently depleted a suction dredge and barges will be returned to the excavation area to restock the storage pile. It is estimated that only one such restocking will be necessary and that if the pile is full on July 1, 1912, it will contain enough sand to finish the concrete work at Gatun. The 18-inch suction dredge which has been excavating sand at Nombre de Dios, will be set at work between Mindi and the lower end of Gatun Locks. Its greatest monthly output of sand amounted to 47,885 cubic yards and was in March, 1911.

The Pacific Division will furnish hereafter, from the pit at Chame, all of the sand for all divisions except the Atlantic, for the Panama railroad and the relocation, and for sale to private parties. The Pacific Division is now using about 45,000 cubic yards of sand a month. The excavation at Chame is made by the ladder dredge *Gopher*, now temporarily supplanted by the *Mole*, while undergoing repairs at the Balboa shipyards.

Pedro Miguel Locks.

The laying of the foundation for the upper center wall of Pedro Miguel locks has advanced to within 130 feet of the upper end. Old steel rails, embedded in the concrete in a vertical position, provide the reinforcement at this stage. Steamshovel 50 is at the upper end of the wall site, excavating for the continuance of the foundation.

A locomotive crane, equipped with an orangepeel bucket, is excavating residuum at the lower end of the east side wall, in preparation for the erection of the wing wall at this point. Besides this, there remains no further excavation at this end of the locks, except for the removal of the railroad embankments, on which lie the tracks to the west backfill and dam.

Atlantic Terminal Docks.

About twenty per cent of the structural steel for the caissons of the Atlantic terminal docks has arrived on the Isthmus and the remainder is to be here by the first of January. The steel is received in flat sheets, and rolled and riveted in 5-foot sections at the Cristobal boiler shop.

Thirteen caissons have been sunk to bedrock and filled with concrete at pier 16. At pier 17, eight caissons have been set and sunk to depths varying between 25 and 55 feet below mean sealevel.

The trestle of the mole, which is to extend across the inshore ends of the piers and carry the railway tracks to them, has been extended 1,300 feet from the shore and a fill to mean sealevel extends 550 feet from shore. The end of the mole trestle is to be built 420 feet farther.

Tidal Data for Pacific Entrance.

In an examination of tidal data, compiled during the time of the French Canal companies and now on file in Washington, records were found recently that appear definitely to connect the Naos Island tide gauge with one that was established at Balboa. If such connection can be established reliably it will permit the use of over five years continuous records from the Naos Island station that have not been available up to the present time. The work of establishing this connection has been authorized. The additional data will be of value in a more definite determination of mean sea level at both the Atlantic and Pacific entrances to the Canal, and in the determination of what tidal changes, if any, have already taken place or are in progress on account of the construction of the Pacific breakwater, the deepening of the channel in the Bay of Panama, and the changes that have been made in the basin of the Rio Grande above Balboa.

Sale of Buildings in Lake Region.

The sale of 65 Canal buildings in the Gatun Lake region, advertised for October 28, resulted in satisfactory bids being received for 47 of them, the total of the bids being $3,052.75. The few structures yet remaining in the villages of Bohio, Tabernilla, and San Pablo will be disposed of at private sale, or will be demolished and the material used elsewhere. The purchasers under the recent sale were as follows:

H. A. Jacobs, Empire, five buildings at San Pablo, $460; Panama Republic, one at San Pablo and two at Tabernilla, $335.00; D. J. Gordon, Empire, one at San Pablo, $40; George Clarke, Gatun, one at Bohio, $40; E. B. Thornton, Empire, 12 at San Pablo, $568; H. J. Wempe, Cristobal, four at Tabernilla, $435; Fred Reuben, Culebra, two at Tabernilla, $30; T. F. Robertson, two at Bohio, $80; Frederick Samuels, one at Tabernilla, $3.00, R. C. A. Cadogan, Colon, one at Tabernilla, $95; E. Sardi, Bohio, two buildings at Bohio, $50; Anthony Guardiola, one at Tabernilla, $45; A. W. Piper, Las Cascadas, four at Tabernilla, $308; C. B. Thaxton, Cristobal, two at Tabernilla, $102.25; J. A. Gordon, Empire, two at San Pablo, and one at Tabernilla, $105; J. Von Redhead, Las Cascadas, one at Tabernilla, $15; P. Canavaggio, Colon, one at Tabernilla, $126; Mezele Gustave, Empire, one at San Pablo, $125.50. Of the total of 47 buildings sold, 5 are situated at Bohio, 20 at Tabernilla, and 22 at San Pablo.

In all there have been sold in the region between Gatun and Gorgona, the section that will be flooded by Gatun Lake, since January 1, upwards of one hundred buildings from which over $4,700 has been realized. About 90 per cent of these were structures included in the purchase from the French. Many of them had been repaired, fitted with new roofs, and made to serve as quarters for the American Canal employes, while a few were not used by the Americans, but merely sold at the best price obtainable. The buildings recently sold will be removed between now and January 1, 1912. Most of them will be rebuilt at hamlets along the relocated line of the railroad, others will be set up in the jungle on tracts leased from the railroad or Commission, and a few

NOTES OF PROGRESS.

(*Continued.*)

will be removed to Panama and Colon for use in buildings there.

It is the aim to have all the lake region between Gatun and Gorgona cleared of buildings before the present line of the railroad is taken up because otherwise the hamlets would be isolated. The railroad will be taken up during the coming dry season (January to May) by the end of which the excavation in progress at Bohio and San Pablo will be completed. All this clearing of the lake region is incident to the rise of the water in Gatun Lake, which will take place as soon as the dam in the spillway of Gatun Dam is raised to 50 feet above sea level, which likewise will be accomplished during the coming dry season. One year hence the water in the lake will be at 55 feet above mean tide, within 30 feet of its final height.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 72 per cent completed, 161,667 cubic yards, out of a total of 225,000, having been placed at the close of work on November 11. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
November 6	140	6.30	1
November 7	42	3.30	2
November 8	72	4.00	1
November 9	76	6.00	2
November 10	88	5.30	1
November 11	94	8.00	2
Total	512	33.30	1½
Previously reported	161,155		
Grand total	161,667		

Porto Bello Crusher.

DATE.	Hours worked.	Cubic Yards.
November 6	4.55	2,003
November 7	3.50	1,604
November 8	3.40	1,659
November 9	2.55	1,386
November 10	4.20	1,722
November 11	4.50	2,006
Total	24.30	10,380

Ancon Crusher.

DATE.	Hours worked.	Cubic Yards.
November 6	7.45	2,509
November 7	6.30	3,151
November 8	7.15	2,478
November 9	8.15	3,020
November 10	7.40	3,143
November 11	3.00	1,088
Total	40.25	15,389

Central Division Unloaders.

Lidgerwood cars were unloaded on the Central Division dumps during the month of October, as follows:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa	3	974	19,480
Miraflores	3	636	12,720
Gamboa	*4	1,030	21,630
Total	10	2,640	53,830

*1 unloader worked from 1st to 9th only.

Visit of Congressmen.

A party of Congressmen and members of their families, comprising in all thirty-five persons, sailed from New York for the Isthmus on the Panama railroad steamship *Cristobal* on November 9, and are due to arrive at Colon on Thursday, the 16th. There are sixteen Congressmen in the party, nearly all of whom are members of the Appropriation Committee. The sailing list is as follows: Congressmen, Fitzgerald, wife and two sons; Burleson, wife and daughter; Johnson and wife; Page and wife; Saunders and wife; Byrns and wife; Kinkead and wife; Good and wife; Sherley, Rauch, Sisson, Cannon, Gillett, Malby, Foster and Webb. The party includes also Secretary Courts of the Appropriation Committee, Mr. Smith, Clerk of the Committee, and three stenographers, and the secretary to Representative Fitzgerald.

CONCRETE WORK IN THE LOCKS.

Over 70 per cent of the concrete for the locks is in place, the amount at the close of work on November 11, being 2,979,489 cubic yards, out of a total of approximately 4,199,400. A total of 27,274 cubic yards of concrete was laid in the locks during the week ending November 11.

GATUN LOCKS.

Over 84 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on November 11 being 1,695,238 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending November 11, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
November 6	1,344	28.20	6	550	6.40	2	40	1,934
November 7	1,568	26.18	6	382	4.40	2	104	2,054
November 8	1,610	26.32	6	184	2.40	2	68	1,862
November 9	1,208	22.22	6	138	2.40	2	52	1,398
November 10	912	16.38	6	240	3.40	2	52	1,204
November 11	1,316	20.54	6	416	5.40	2	52	1,784
Portable mixers				281				281
Total	7,958	141.04	6	2,191	26.00	2	368	10,517
Previously reported								1,684,721
Grand total								1,695,238

*The 281 yards shown for the portable mixers are reinforced concrete, and were placed on the following days: November 6th, 9½; November 7th, 25½; November, 8th, 100; November 9th, 51; November 10th, 38; November 11th, 57.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 91 per cent completed, 764,246 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on November 11. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
November 6	944	24.00	3	283	13.50	2		1,227
November 7	504	13.50	3	184	8.50	1		688
November 8	772	18.50	3	5	1.00	1		777
November 9	392	10.50	3	182	10.25	3		574
November 10	662	18.00	3	327	24.00	3		989
November 11	618	18.00	3	228	18.50	3		936
Totals	3,892	102.50	3	1,209	75.75	2.17		5,191
Previously reported							4,423	759,055
Grand totals							4,423	764,246

MIRAFLORES LOCKS.

Over 38 per cent of the concrete for the system of two twin locks at Miraflores was in place on November 11, the total amount on that date being 520,005 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
Nov. 6	730	27.50	7	848	13.10	2	391	27.00	5		1,969
Nov. 7	720	31.00	7	798	12.40	2	401	25.50	4		1,919
Nov. 8	758	35.00	7	818	13.60	2	426	37.00	5		2,002
Nov. 9	606	27.00	7	918	13.40	2	448	37.00	5		1,972
Nov. 10	846	31.50	7	906	12.70	2	302	24.50	3		2,054
Nov. 11	814	26.08	6	682	10.55	2	154	8.00	1		1,650
Total	4,474	178.08	6.83	4,970	75.75	2	2,122	159.00	3.83		11,566
Previously reported										3,693	508,439
Grand total										3,693	520,005

AIR AND WATER SERVICE.

Method by which Drills and Steamshovels in Culebra Cut are Supplied.

Without water the steamshovels could not operate, and without compressed air it would be necessary to have a fire in each of the boilers of the 130 well drills working in Culebra Cut. But compressed air is used for both the well and the tripod drills, and like the water for the shovels it must therefore be supplied. This dual supply would be a simple matter if the shovels and drills remained in one place, but they are constantly moving forward, while as the excavation advances the elevation at which they work also changes. An indispensable part of the digging of Culebra Cut, therefore, is furnishing a constant supply of water and compressed air, and this duty is assigned to a special section of the Central Division organization, which does no other work.

Water is supplied from the reservoirs at Rio Grande and Camacho, and the pumping stations at Bas Obispo, Lirio, La Pita Point, Gamboa, and Dump No. 5 on the relocation of the Panama railroad, air from the compressor plants at Rio Grande, Empire, and Las Cascadas. A common method is used in distribution.

Culebra Cut is, roughly speaking, 8½ miles long. Across the south end, at Paraiso, runs the Panama railroad trestle, across the north end is the dike that guards the cut from flooding by the Chagres River, while about midway between these two points the suspension bridge at Empire spans the canal. A parallel system of air and water mains, 6, 8, and 10-inch pipes, runs along each side of the Cut, and the mains are connected by way of the trestle, dike, and bridge referred to, making a complete circuit around the 8½ miles of excavation, with a connection half way. At regular intervals, usually about 1,500 feet, are gate valves by means of which the water or air may be shut off from any section of the circuit, without cutting the supply off from the remaining sections. At intervals of 500 feet lateral mains of 2, 4, and 6-inch pipe run from the supply mains over the edge of the Cut. These likewise are supplied with gate valves, and at their free ends are connections to which pipe or hose can be attached to carry water or air to the shovels or drills.

In all there are 181,200 linear feet, or 34.31 miles of 6, 8, and 10-inch air and water mains in use; and 45,300 feet or 8.6 miles of lateral drop pipes. An average of over 400,000 linear feet, 75.7 miles, of supply pipes to the drills and shovels from the lateral drops is taken up and relaid monthly. To keep the service in working order, the Superintendent of Municipal Work and Pipe Lines has at his order 218 men, including one general foreman, seven foremen, and two steam engineers, all Americans on the gold roll, and the following silver roll men: Pipefitters, 62; pipefitters' helpers, 70; carpenters, 4; laborers, 54; messengers, 4; clerk, 1; watchman, 1; stationary engineer, 1; foremen, 8; oilers, 2; waterboy, 1.

Day and night some men of this force patrol the edges of the Cut looking for leaks, breaks, and evidences of such movements in the banks as may result in breaks or in forcing a removal of the mains to other positions. In addition all the workers of both the night and day forces report mishaps of any character, and thus the the Superintendent at Empire is kept informed of the location of trouble. The "trouble" work is in addition to the regular work of changing pipes as the shovels and drills move forward.

One night recently a portion of the bank on the east side of the Cut opposite Culebra slid into the Canal carrying with it a section of the mains from which water was supplied to half a dozen steam shovels near Gold Hill, and air to a battery of drills. Within half an hour after the break was reported the repair gang was at work. It was not possible to restore the mains at once, so the gate valves on either side of the break were closed, and pipes were laid from the mains on the west side of the Canal, across the bottom of the Cut—through the Culebra slide, over ditches, and under railroad tracks—to the shovels and drills. It was after midnight when the break occurred, yet water and air were available at 7 o'clock that morning and the shovels and drills began work on time. It took a week to restore the mains.

One of the frequent causes of moving the mains are the slides. At Culebra the gradual breaking away of the bank made it necessary a few months ago to move back both the air and water mains a distance of several hundred feet from the edge of the Cut. A similar removal was necessary at Cunette, near Empire, a year ago, and several smaller shifts have been made on the east bank on account of slides. Such changes as these amount to taking up and relaying whole sections of the mains; yet on account of the system of two complete circuits maintained, these removals have never delayed the work.

Two months of the dry season and two of the wet season have been taken to indicate the amount of work that must be done in this branch of the Culebra Cut service in order to keep the excavation force from delays due to waits for water and compressed air. The number of feet of pipe installed and moved during January, February, August and September is as follows:

Months.	Installed lin. feet.	Moved lin. feet.	Total lin. feet.
January	503,620	447,020	950,640
February	454,860	423,130	877,990
August	445,510	424,320	869,830
September	400,710	370,620	771,330

These figures include a small amount of work in the Chagres section.

An analysis of the work done in September, as regards the size of pipe installed and removed, follows, figures being for Culebra Cut only:

Size of Pipe.	Installed lin. feet.	Removed lin. feet.	Total handled lin. feet.
¾ inch	4,930	1,910	6,840
1 inch	168,400	146,380	314,780
1¼ inch	5,580	5,160	10,740
1½ inch	21,060	17,640	38,700
2 inch	156,520	159,170	315,690
2½ inch	32,840	30,960	63,800
3 inch	7,040	5,380	12,420
4 inch	1,540	1,760	3,300
6 inch	2,540	1,700	4,240
10 inch	260	560	820
Total	400,710	370,620	771,330

The concrete buttresses for the cofferdam erected on the caisson sill at the lower end of Gatun Locks will be sixty days old about the middle of December, and by that time the facing of the cofferdam will be finished. Suction dredges will then proceed with the removal of the earth dike in front of the locks, which now protects the lower chambers from inundation. It is planned to continue the construction of the side walls up to sea-level, placing bulkheads in the culverts to prevent their being flooded.

STEAMSHOVEL RECORDS.

Work in Culebra Cut and on P. R. R. Relocation.

During the month of October the total amount of material excavated in the Central Division was 1,322,588 cubic yards, of which 189,482 cubic yards were classified as earth, and 1,133,106 cubic yards as rock.

Of this quantity 1,309,752 cubic yards were removed by steam shovels, 620 cubic yards by bucket crane, contractors removed 4,704 cubic yards by sluicing, and 7,512 cubic yards by hand.

The high record for the month was made by Shovel No. 224, working 25 days in the Culebra District, which excavated 46,657 cubic yards of rock.

The second best record for the month was made by Shovel No. 254, working 20½ days in the Culebra District, which excavated 45,887 cubic yards of rock.

The best record for a shovel of the seventy-ton class was made by Shovel No. 109, working 24 days in the Culebra District, which excavated 29,362 cubic yards of rock and earth.

Shovel No. 223, working in the Culebra District, made a high record for one day by excavating 3,219 cubic yards of rock on October 7.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month and for one day are shown below:

BEST RECORDS FOR THE MONTH.

EMPIRE DISTRICT.

Shovel No.	Cubic Yards. Earth.	Rock.	Total.	No. of days at work.
215	17,900	17,849	35,749	26
210		34,538	34,538	26
226		33,116	33,116	26

CULEBRA DISTRICT.

Shovel No.	Earth.	Rock.	Total.	No. of days at work.
224		46.657	46,657	25
254		45,887	45,887	20½
207		43,740	43,740	26

PEDRO MIGUEL.

Shovel No.	Earth.	Rock.	Total.	No. of days at work.
122	24,786		24,786	26

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
205	Empire	Oct. 23	Rock	2,500
205	Empire	Oct. 21	Rock	2,260
232	Empire	Oct. 9	Rock	2,225
223	Culebra	Oct. 7	Rock	3,219
207	Culebra	Oct. 2	Rock	3,177
254	Culebra	Oct. 11	Rock	2,679
122	Pedro Miguel	Oct. 6	Earth	1,520

Relocated Line of Panama Railroad.

The total steamshovel excavation on the relocated line of the Panama railroad amounted to 367,085 cubic yards.

The best month's record was made by steamshovel No. 257, working on the Gatun section, which excavated 59,220 cubic yards of solid rock.

In the 70-ton class, the best month's record was made by steamshovel No. 128, working on the Gatun section, which excavated 33,280 cubic yards of earth and 8,000 cubic yards of solid rock, a total of 41,280 cubic yards.

The best day's record for shovels with 5-yard dippers was made by steamshovel No. 257, which excavated 3,380 cubic yards of rock on October 10.

The best day's record for shovel with 3-yard dippers was made by steamshovel No. 128, working on the Gatun section, which excavated 1,900 cubic yards of earth on October 3.

Month's records are by place measurement, and day's records by car measurement. All material was loaded in 10-yard dump cars.

BEST RECORDS FOR THE MONTH.

SHOVEL No.	Location.	Cubic Yards by Cross Section.			
		Days worked.	Earth	Rock.	Total.
257	Gatun....	22	....	59,220	59,220
128	Gatun....	26	33,280	8,000	41,280
263	Gatun....	26	3,740	37,280	41,020
121	Paraiso...	26	26,585	4,300	30,885
123	Empire....	25	19,315	11,000	30,315

BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
257	Gatun......	Oct. 10	Rock............	3,380
262	Monte Lirio.	Oct. 11	Earth and rock...	3,220
263	Gatun......	Oct. 5	Rock............	3,120
266	Paraiso.....	Oct. 3	Earth...........	2,410
128	Gatun......	Oct. 5	Earth...........	1,900

Total steam shovel output during the month of October, 367,085 cubic yards.
Total number of steam shovel working days, 270.
Average output per working day, 1,360 cubic yards.

Half-rate Transportation for Employes.

The Panama railroad is preparing to sell mileage books to employes of the company and of the Isthmian Canal Commission at the rate of 2½ cents a mile for first class carriage. The books will be issued in 200 and 400 mile form, at $5 and $10 respectively, and in the case of the head of a family will be good for use by the holder and dependent members of his family. Two hundred and fifty pounds of baggage may be carried for each book. The books will be on sale at the stations of the railroad for cash, it having been decided not to use the deduction from salary system. The present system of issuing half rate tickets to employes will be discontinued as soon as the new system is put into effect.

Second class carriage will be regulated by the terms of the following circular:

CIRCULAR No. 401:

Effective December 1, 1911, the issuance of second class half-rate requests, and the sale of second class half-rate tickets, will be discontinued. A flat rate of two cents per mile will be granted all second class passengers and revised passenger tariff covering is now being prepared.

J. A. SMITH,
General Superintendent.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on November 22, 1911. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examinations must be present at the Administration Building at 8.00 a. m. on November 22, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

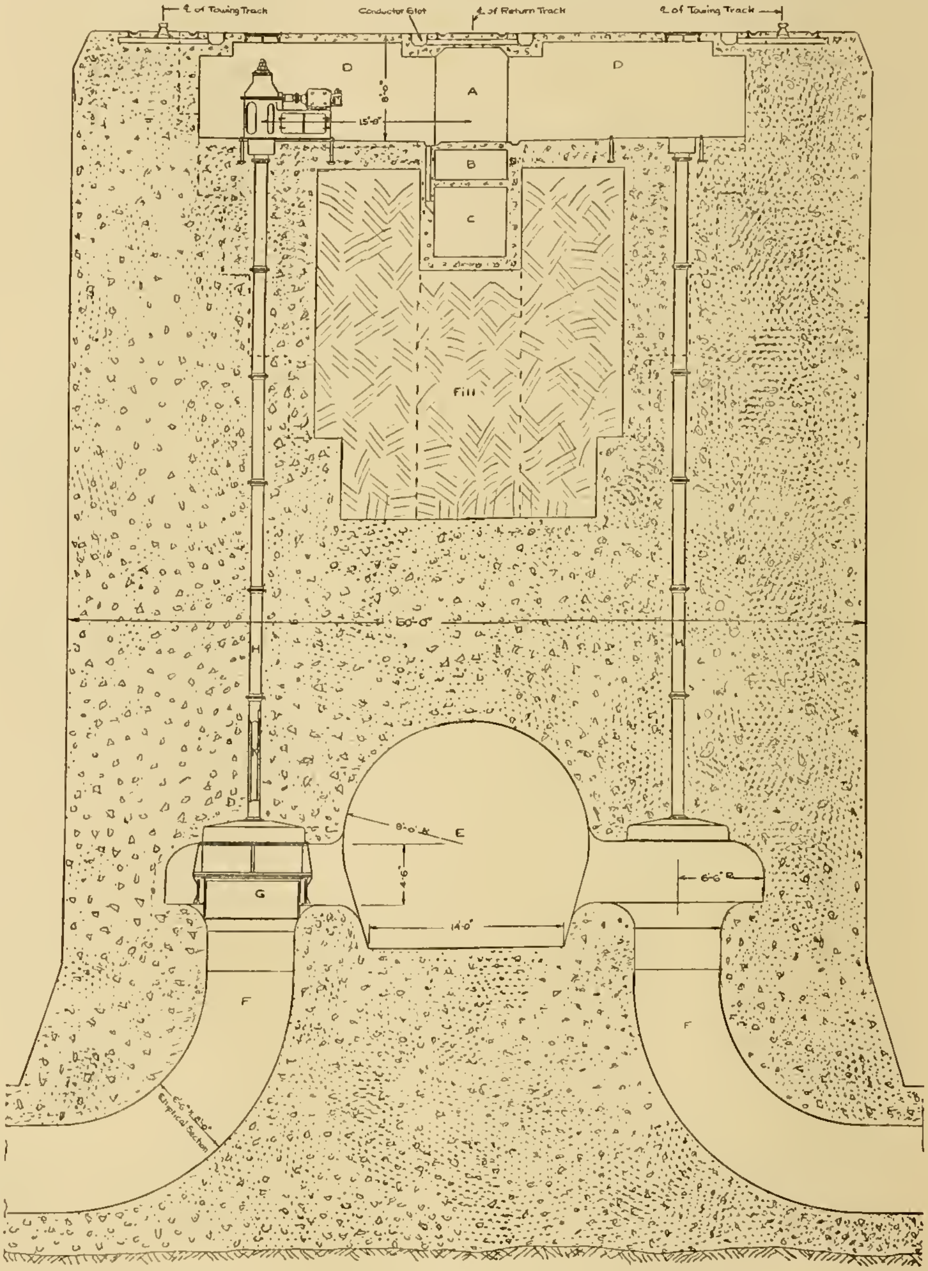
The steamship *Leelanaw* arrived at the port of Balboa on November 10, from San Francisco, towing the ship *Babcock*, with a full cargo of wine and barley for New York.

CYLINDRICAL VALVES.

Installation of Valves and Operating Machines.

The work of installing the first of the cylindrical valve machines in the locks was begun at Gatun last week and will probably be finished this week. This is the machine for valve No. 559, which is in the center wall of the upper locks at Gatun, and closes one of the 30 openings from the center wall culvert into the lateral culverts of the three west lock chambers. The number indicates only position, because in all there are only 120 of these valves in the locks—sixty at Gatun, twenty at Pedro Miguel, and forty at Miraflores. The object of the valves is to control the flow of water from the center wall culvert into the lateral culverts beneath the floor, whence it rises through wells in the floor into the lock chamber. This control is necessary in the case of the center wall culvert, in order that the twin chambers may be used independently of one another. In the side wall culverts the flow of water is regulated by gate valves in the culverts themselves, and there are no cylindrical valves controlling the flow through the lateral culverts.

In the accompanying sketch (A) the position of the valves and the machines that operate them is shown with relation to the center wall culvert. The valves themselves are embedded in the concrete during the construction of the wall, an opening being left for the rising stem, and the chamber for the machine also being left open at the top until the machine is installed, after which the decking of reinforced concrete will be laid. After they were placed some of the valves underwent tests, all of which were satisfactory, and the machine now being installed also passed its test at the plant of the manufacturer in Wheeling, W. Va., in October. It is proposed



SKETCH A.

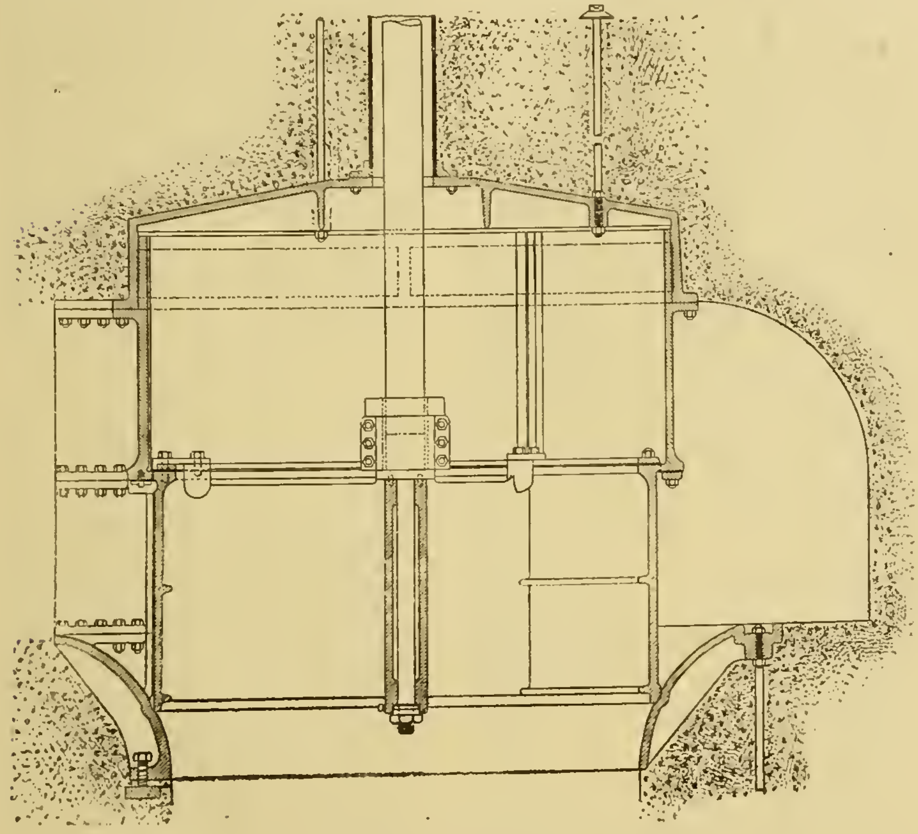
TYPICAL SECTION OF CENTER WALL OF LOCKS AT CENTER LINE OF CYLINDRICAL VALVE.

A—Machinery Operating Tunnel. B—Duct Space. C—Drainage Tunnel. D—Cylindrical Valve Machinery Chamber. E—Main Culvert. F—Lateral Culvert. G—Cylindrical Valve. H—Valve Stem Casing. K—Valve Stem.

now to test both the valve and machine in place.

Valves—The valves consist of two concentric hollow cylinders, one stationary and the other movable. The opening is closed when the movable cylinder is in its lowest position, at which time the upper end of the movable cylinder comes in contact with a leather washer making a seal; simultaneously the lower end is pressed against a turned metal surface, known as the valve seat.

In the accompanying illustration (B) a section through a valve is shown. The upper cylinder is fixed and in it moves up and down the lower cylinder, in harmony with the impulse of the screw or stem. When the valve is closed this movable cylinder presses against the seat in the fixed casting at the bottom of the valve chamber, thus making a watertight seal. The opening from the center culvert to the valve chamber is approximately rectangular in shape, 4½′ X 13′-0″. When the valve is entirely open the moveable cylinder is within the fixed cylinder, leaving 2 feet 1½ inches opening completely around the valve for the flow of water. The diameter of the moveable cylinder is 7 feet 1⅜-inches, that of the culvert below the valve 6½ feet, for two feet below the valve seat, changing at a point three feet lower into an elliptic whose major axis is 8 feet and minor 6 feet 6 inches. This elliptical culvert extends across the lock chamber under the floor.



SKETCH B.

SECTION THROUGH CYLINDRICAL VALVE.

Diameter of outlet from central culvert 4½ feet; of outlet under valve 6½ feet; of movable cylinder of valve 7 feet 1⅜ inches.

Valve Machine—The stem by which the movable cylinder is raised or lowered, in other words by which the valve is operated, passes through a stuffing box mounted upon the upper end of the valve stem casing, which is bolted to the fixed cylinder and thence through a metal casing to the operating machine, as shown in sketch (A.) At its upper end the stem has fastened to it a non-revolving nut. This nut, and hence the valve and valve stem, is moved vertically through a distance of 3 feet by means of a revolving screw, the end thrust being taken up by a roller bearing at the upper end of the screw. The screw is actuated by a bevel gear, which is driven by a pinion on an extension of the motor shaft. A combination casing and bedplate carries the motor, limit switch, bearings, and all moving parts. A small oil pump geared to the motor shaft lubricates the thrust bearings, and motor shaft extension bearings. When the valve reaches its seat, shock to the machinery is prevented by allowing the thrust screw to rise through the thrust sleeve, giving the motor time to stop without shock.

A test of two of the cylindrical valve machines, including that now being installed, with the motors and limit switches, was made at the plant of the manufacturer, under the direction of a representative of the Commission, during September and October. For this purpose the machines were mounted in position similar to that they will occupy in the locks, and they were operated under various conditions with weights of 9,000 and 14,000 pounds. After preliminary tests to check alignment, the fit of various parts, and the strength of the testing platform, the machines were operated through 100 cycles at intervals of from one to three minutes with four different motors and limit switches. In each instance the machine operated satisfactorily and in accordance with the specifications. Two kinds of lubricant were used. Turbine oil proved so light that it was thrown or squeezed out by the centrifugal pressure so that a heavier oil was substituted. The results of the test for machine No. 559 were as follows:

	Up 9000 lbs	Down 9000 lbs	Up 1,400 lbs.	Down 1,400 lbs.
Stroke.......	36 ins.	36 ins.	35⅛+1⅞ in.	35⅛+1⅞ ins
Time........	....	....	11.4 sec.	9.4 sec.
Running torque.......	86	....	112	....
H. P. at coupling.......	10.8	....	13.0	....
Amperes.....	34	18.5	44	20
K. W. at motor term'als	10.9	*0	14.1	-1.27
Machine efficiency*....	....	....	*51.5 p. c.	....

*Efficiency, is the ratio of energy input to the motor, divided by actual energy output. This accounts for both electrical and mechanical losses.

Washington Hotel Sea Bath.

Work is nearing completion on the sea bath that will form part of the equipment of the new Washington Hotel now in process of construction on Colon beach. As soon as the bath and its houses are completed, it will be opened to the public. Canal and railroad employes, and guests of the Washington Hotel, not using the dressing rooms will be charged 5 cents for the use of the bath, and those using the dressing rooms will be charged 25 cents, which will include the use of a shower bath and towels. There will be ten bath houses for each sex, each house being for one person.

The swimming pool is 125 by 100 feet, and from 3 to 9 feet deep. It is open on the sea side so that there is a continual change of water.

Family Quarters for Tenth Infantry Officers.

The War Department has authorized an additional expenditure of $25,000 from the "barracks and quarters" appropriation, for the construction of suitable quarters on the Isthmus for the families of officers of the 10th infantry. At present the families of the officers are housed in very inadequate quarters at Camp Otis near Las Cascadas.

Work has been begun on the removal of buildings from Tabernilla and San Pablo, and when they are re-erected at Camp Otis there will be suitable quarters for 45 officers. The Commission hotel at San Pablo will be moved to the camp and run as a post exchange. In all $50,000 has been apportioned for the barracks and quarters at Camp Otis.

Electrical Engineers.

Word has been received from the United States that a party of members of the American Institute of Electrical Engineers, numbering about 120 persons, will arive at Colon on January 25 and will leave for the States on February 1. The midwinter meeting will be held here and informal meetings will be held on board the ship both coming to the Isthmus and returning to the States.

Stamps in Books.

Books of stamps, with the gummed side shielded by paraffine paper, will presently be on sale at the Canal Zone post offices. Only two cent stamps will be sold, and these in books of 12, costing 25 cents, and 24, costing 49 cents.

In the street improvements in the city of Panama, in the area bounded by Fourth of July Avenue and the Balboa Road, and lying west of Sixteenth Street, 1,400 feet of sewer pipe has been laid and covered on Ancon Boulevard, between the Balboa Road and a point south of the National Institute. Laterals are being laid from this main and the laying of water mains has begun.

SOCIAL LIFE OF THE ZONE.

Salvation Army.

The dormitories of the new building of the Salvation Army Social Institute in Cristobal were opened this week with 86 beds, this being an increase of 12 over the number in the building destroyed by fire in March. Since the opening of the present building in September, 100 meals on an average have been served daily in the restaurant. The Commission has granted to the army the site occupied by the old building where a hall for holding services will be erected. A request has been made for permission to erect a building similar to the one now in use for institutional work in Panama.

On Monday, November 13, Commissioner Richards, of the South African forces of the Salvation Army, and Col. Sydney Maidment, of the West Indies and South American Division, arrived on the Isthmus for an eight days' visit. During the week meetings have been held in the Wesleyan churches in Colon, Gatun and Panama, and in St. Andrews church, Gorgona, by courtesy of the Commission and of the superintendents of the congregations. On Monday, November 20, Colonel Maidment, accompanied by Adjutant Catlin, head of the work for Panama and the Canal Zone, will leave for a visit to Bocas del Toro, Port Limon, and other points, and Commissioner Richards will return to England.

Benefit for Widow of Captain Hammond.

The following letter is published for the information of subscribers to the fund for the benefit of Mrs. Edwin D. Hammond:

EMPIRE, C. Z., November 9, 1911.

Mrs. ANNABELL M. HAMMOND,
South Orange, N. J.

Dear Mrs. Hammond:

Capt. A. W. Haynes of the Panama R. R. S. S. *Allianca* will hand you herewith a set of resolutions in memory of the late Capt. Edwin D. Hammond, by his many friends on the Isthmus of Panama and with the Panama Railroad and Steamship Company.

Also he will hand you a Treasury draft for one thousand, One Hundred and Fifty Dollars ($1,150.00). This amount was subscribed by the late Captains' friends to be used in a manner elected by you.

Very respectfully,
W. G. ROSS,
Secretary and Treasurer to the Committee.

Convention of Isthmian Sunday School Association.

The Isthmian Sunday School Association held a convention at Gorgona on Sunday afternoon, November 12, the occasion being the annual visit of the secretary for the International Sunday School Association, the Rev. Aquila Lucas. Fifteen Sunday schools in the Canal Zone were represented, 100 teachers, workers and officers being present. The meeting was presided over by the president of the association, the Rev. A. A. Nellis, Commission chaplain at Empire and Culebra. Addresses were made by Mr. Maurice H. Thatcher, who spoke on the Sunday school as a historic institution; Justice Thomas E. Brown, Jr., who spoke on some values of Bible knowledge taking ethical, literary, and historical stand points; and the Rev. Mr. Lucas, who brought messages from the International association, and outlined the plans of that organization for the year. These plans fall under seven heads as follows: (1) Increase of effective organization; (2) increase of membership; (3) addition to the mission schools already organized; (4) additional interest in teachers' training classes; (5) organization of classes of adults for Bible study; (6) visiting, in connection with the home department of the Sunday schools; (7) conversions.

After a period of inactivity a Sunday school was reorganized in Bas Obispo on November 12 by the Rev. J. C. Elliott, and a school was started at Paraiso on the same day.

Saint Luke's Chapel and Guild.

The annual meeting of the Woman's Guild of St. Luke's Hospital chapel, Ancon, was held at the Hotel Tivoli on Tuesday afternoon, November 7. For the first time since its organization, on December 2, 1907, the guild had been in recess, meetings having been suspended during the months of September and October. Events of the past year in which the guild had share or interest were, the decorating of the church for the services at Thanksgiving and Christmas, the children's service and Christmas tree on December 28, when about 40 children were remembered with gifts, the annual picnic for the Sunday school at Tobaguilla, an entertainment for the organ fund, and a reception to Bishop Knight on his annual visitation in January. Gifts to the church during the year are a credence shelf, a litany desk, altar linens, and silk fittings for use in the altar service. During Lent meetings were held each Tuesday morning at the Hotel Tivoli, at which a series of addresses on church history and ritual were given by the chaplain. The officers elected for the year are as follows: President, Miss J. M. Beattie; Vice-President, Mrs. Charles F. Mason; Secretary, Mrs. J. P. Fyffe; Treasurer, Mrs. H. C. Hanson. The next meeting will be held at the home of Mrs. W. C. Gorgas on Tuesday afternoon, November 21, at 3.30 o'clock.

Under the direction of the guild the Sunday school of St. Luke's church will be reopened on Sunday, November 19. Instead of being as formerly from 9 to 10 o'clock, the school will meet immediately after the morning service, at 11 o'clock.

The usual service will be held at St. Luke's church on Thanksgiving day at 9 o'clock. The service will be short. There will be an address and suitable music will be provided.

The Rt. Rev. Albion W. Knight, bishop of Cuba, will arrive on the Isthmus on December 30 for his annual visitation. He will remain about ten days.

Church and Lodge Hall at Cristobal.

Because of the encroachment of the work on Cristobal Point it has been found necessary to remove the offices of the District and Circuit Courts from the rooms in Building No. 1, and the building erected by the Commission for church and lodge purposes has been remodelled to accommodate the courts. The lower story will be used by the District court and the upper story by the Circuit court, with offices for the officials.

The Union church at Cristobal hopes to be able to erect a church building, but in the meantime, services will be held at the usual hour, every Sunday evening at 7.45, in the Commission clubhouse, and the Sunday school will remove into the room formerly occupied by the District court.

Meetings of the lodges and societies will be held in the former rooms of the Circuit court. Following are the names of the societies that are affected by this change: Isthmian Order of Engineers and Conductors; Independent Order of Odd Fellows, Cristobal No. 2 and No. 474; Daughters of Pocahontas, Osceola Council, auxiliary to the Independent Order of Red Men; Independent Association of Mechanics, Canal Zone No. 699; Independent Order of Paraman Kangaroos, Cristobal No. 8; Knights of Pythias, Panama No. 1.

PERSONAL.

Chief Justice H. A. Gudger, accompanied by his wife and daughter, arrived on the *Colon* from his annual vacation in the States on November 12.

Sir Sydney Olivier, Governor of Jamacia, accompanied by members of his official household, arrived on the Isthmus on November 13, for a visit of four days.

Major G. M. Hoffman sailed on the *Allianca* on November 11 to spend his annual leave in the States.

Visitors to the Canal.

The Hotel Tivoli has made reservations for the following parties of tourists. House Committee on Appropriations, November 17, 35 persons; American Bankers' Association, November 30-December 2, 350 persons; University of Cincinnatti students, Christmas holidays, from 40 to 200 persons; House Committee on Interstate and Foreign Commerce, December 18, 50 persons; American Institute of Electrical Engineers, January 21 to February 1, 120 persons; Gregory tourists from St. Louis, January 25 to February 1, 100 persons; Business Men's League of St. Louis, February 15 to 22, 100 persons; Steamship *New York*, luncheon, February 2, and March 6, indefinite number of persons.

Church Notes.

There will be a Thanksgiving service in Christ Church, Colon, on Thanksgiving Day at 9 a. m. On Sunday, November 19, the annual harvest festival services will be held in the church.

The Ladies Auxiliary of the Empire Christian League will hold a Thanksgiving entertainment in the chapel on Friday, November 24. The program will consist of songs and recitations by the children of the village. The proceeds will be devoted to mission work in the Canal Zone.

The "Fidelity" Bible study class for women has been organized in Empire, with Mrs. H. A. Smith as the president, and Mrs. Stephen Witt as chairman of the social committee. The meetings are held on the first Tuesday in each month in the chapel. At each meeting a program is provided; mothers' meetings are a feature, and a reception follows each meeting.

I. B. of S. S. and D. M.

Local No. 19, I. B. of S. S. and D. M., will hold its regular meeting on Sunday, November 19, at Empire lodge hall at 12.15 p. m. All members are requested to attend.

Loyal Order of Moose.

All members in good standing of the Loyal Order of Moose who are located on the Isthmus are requested to communicate with Wm. A. Fawks, care of Division Engineer, Corozal, Canal Zone.

The monthly outing of the Boy Scouts was held on November 3, the day being spent at Toro Point. A Commission launch was detailed to carry the boys over and return and transportation was given on the Panama railroad for the party, which consisted of 53 boys and six scout masters. The next outing will be held on Thanksgiving day.

EXECUTIVE ORDER.

Permits for Carrying Firearms.

By authority of the President of the United States, it is ordered:

That Act No. 14 enacted by the Isthmian Canal Commission, by authority of the President under date of September 3, 1904, entitled "An Act to Establish a Penal Code for the Canal Zone, Isthmus of Panama," as amended by the Executive Order issued under the authority of the President by the Secretary of War, December 1, 1909, be, and the same is hereby, amended so that Section 456 of said Penal Code as amended in said Executive Order, shall now read as follows:

"The license fees for permits issued by the Treasurer under the provisions of this Title shall be as follows: For every permit issued to carry a firearm abroad, five dollars ($5); for every permit authorizing an overseer or watchman engaged by a private employer, ten dollars ($10), for each watchman or overseer so authorized to carry a firearm; for each hunting permit, five dollars ($5); provided that no charge shall be made for hunting permits issued to enlisted men of the land or naval forces of the United States stationed on the Isthmus of Panama. The treasurer shall keep a record of all licenses issued by him, with the name and residence of the persons to whom they are issued, and the date and serial number thereof."

HENRY L. STIMSON,
Secretary of War.

War Department, Washington, D. C.
November 3, 1911.

OFFICIAL CIRCULARS.

Consignment of Freight for Individuals or Companies.

CULEBRA, C. Z., November 6, 1911.

HEADS OF DEPARTMENTS AND DIVISIONS:

It has been brought to my attention that certain repair parts ordered by the Darien Gold Mining Company and the California-Atlantic S. S. Company were recently forwarded from the Gorgona Shops consigned to the Pacific Division at Balboa on I. C. C. billing. This was done to expedite shipments and save time. Although the facts in this instance were duly reported to the Panama Railroad Company in order that bill might be rendered against the two consignees, the practice is disapproved. For the protection of the Panama Railroad Company it is directed that all freight intended for individuals or companies be accurately consigned.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Superintendent of Construction, Atlantic Division.

GATUN, November 10, 1911.

Effective November 11, and during the absence on leave of the undersigned, Mr. C. R. Hughes, Superintendent, will be in charge of construction work of the Gatun Dam and Spillway.

He is hereby authorized to sign my name over his initials to property papers.

G. M. HOFFMAN,
Resident Engineer.

Approved:
CHESTER HARDING,
Acting Division Engineer.

Sale of Panama Cafe Building.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., October 27, 1911.

Sealed proposals for the purchase of building located on lot north of Panama passenger station, and known as "Panama Railroad Cafe" building, will be received in this office until 3.00 p. m., November 20, and then opened.

Bids must be made for the building as it stands on the ground, the successful bidder to remove the building within thirty days' time after notified that bid has been accepted.

Proposals should be accompanied by certified check, Post Office money order, or cash, for 5 per cent of the amount of bid, which will be returned to unsuccessful bidders.

The successful bidder will be given a freight rate of $2.25 per ton in case it is desired to ship the material to any point along the line.

Envelopes containing bids should be endorsed: "Proposal for purchase of Panama Railroad Cafe Building." and addressed to

J. A. SMITH,
General Superintendent,
Panama Railroad Company.

Misdirected Letters.

ANCON, C. Z., November 15, 1911.

The following insufficiently addressed letters originating in the United States and its possessions, have been received at the office of the Director of Posts, and may be secured upon request of the addressees:

LETTERS UNCALLED FOR NOVEMBER 8.

Cartier, Henry F.
Carty, John I.
Clarke, John W.
Crawford, E. M.
Edwards, Claud R.
Grindstaff, Frank
Gorno, John (or Gomo)
Heath, W. H.
Hendrickson, Wm.H.(pkg.)
Kelly, Larneh
Kidston, W. S. (2)
Kidston, W. S. (pkg.)
McCowan, F. P.
McGowan, F. P.
McGeorge, James
Marshall, John
Mehemmed, Husein
Napier, Miss Amelia
Ridenhour, J. P.
Ridenhour, J. P. (pkg.)
Rose, John
Rouse, Frederick
Seybold, G. E.
Spangler, Leonard G.
Thomas, Emanuel
Turner, Mrs. C.
Wiltshire, Charlotte

LETTERS UNCALLED FOR NOVEMBER 15.

Atherly, Arnold
Auer, Geo.
Baseshore, A.
Bennick, F. G.
Burns, Lawrence
Campani, Sidney
Cook, Otis
Cutler, Harry
DeGraham, F. F.
Fitzgerald, Emmett
Ford, A. P.
Foster, Frank
Griffin, John J.
Harrison, Fred, N.
Hersh, S. J.
Hess, William
Hicks, Hugh C.
Hopkins, S. C.
Humphrey, E. E.
Jennings, S. W.
Kratli, John O.
Leigey, Paul
McLaughlin, Patrick A.
Martin, Mrs. A.
Mitchell, J. C.
Novensky, Miss Pearl
Pro, John
Quick, P. H.
Rodriguez, Jesus & Co.
Shire, William
Shrimpton, Mrs. Bessie W.
Smith, J. T.
Strom, Charles A.
Swartzenholzer, Lawrence
Syhut, Stanislaw
Vanneman, Rolt
Vaughan, Chas. C.
Villane, Guglielino
Walters, Felise
Willing, Lt. E. S.
Witmer, G. S.
Zirkle, John L.

Rainfall from November 1 to 11, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section	*Ins.*		*Ins.*
Ancon	.74	4	2 07
Balboa	.80	7	1.91
*Miraflores	1.05	10	4.39
Pedro Miguel	.96	8	4.36
Rio Grande	2.67	11	8.43
Central Section—			
Culebra	2.28	11	7.95
*Camacho	2.22	4	7.47
Empire	2.78	11	6.87
Gamboa	2.28	11	6 79
*Juan Mina	1.41	4	5.01
Alhajuela	2.46	6	8.69
*El Vigia	1.58	4	6 50
*Gorgona	1.46	4	5.41
San Pablo	.97	5	5 39
Tabernilla	1.25	5	5.82
Bohio	2.80	4	11.74
*Monte Lirio	3.17	11	13.45
Atlantic Section—			
Gatun	3.79	6	12.13
*Brazos Brook	7.55	7	11.50
Colon	2.98	7	8.20
Porto Bello	1 71	7	†7.27
*Nombre de Dios	1 35	7	7.23

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—value midnight to midnight. †To 5 p. m. November 10.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, November 4, 1911. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Nov. 5	127.6	93.9	48.7	19.4	18.4
Mon., Nov. 6	129.6	95 1	49.3	20.2	18.8
Tues., Nov. 7	134.5	98 7	52.3	21.6	19.9
Wed., Nov. 8	129 0	95.2	50 2	21.4	20.0
Thurs., Nov. 9	128.4	94 5	48 5	20.4	19.9
Fri., Nov. 10	129.4	95 0	48.3	20.2	19.6
Sat., Nov. 11	131 2	96.3	51.8	20.8	19.4
Height of low water	125.0	92.0	44.0		

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The following is the schedule for moving picture shows for the week of November 20 to 25: Monday, Gorgona; Tuesday, Gatun; Wednesday, Cristobal; Thursday, Culebra; Friday, Empire; Saturday, Corozal.

The standing of the teams in the Isthmian Basket Ball League on November 11, was as follows:

Team.	Won.	Lost.	P. C.
Cristobal	6	0	1.000
Gatun	4	1	.800
Gorgona	3	2	.600
Culebra	2	3	.400
Corozal	0	4	.000
Empire	0	5	.000

Standing of the Isthmian Ten Pin League is as follows:

Team.	Won.	Lost.	P. C.
Empire	44	16	.733
Gatun	34	26	.567
Cristobal	33	27	.550
Gorgona	26	34	.417
Marines	26	34	.417
Culebra	17	43	.283

CULEBRA.

A local bowling tournament was organized on Saturday with four teams entered, each composed of six men.

The following were high scores for the week: Ten pins—Driscoll, 201; Case, 217; Cushing, 222; Warner 202. Duckpins—Palmer, 112; Case, 108; Dundas, 106, Judge, 106, 104.

EMPIRE.

The basket-ball game played Saturday, November 11, between the "Has Beens" and the regular team resulted in the formers' winning by the score of 32 to 16. The line-up was as follows:

"Hasbeens".		First Team.
Eason	L. Forward	Alley
Warr	R. forward	Koperski
Bartholemew	Center	Bushy
King	L. guard	Adams
Conn	R. guard	Greening

The regular monthly business meeting of the Literary Society will be held Friday evening, November 17. A good program has been arranged for this meeting.

Fifty new library books have just been placed in the library. They include some of the late fiction.

GORGONA.

The Social Study Club met Wednesday evening, November 8, and discussed the subject of accidents in industrial enterprises. At the meeting of the Club on November 15, the topic, "Health a Christian Duty," will be taken up.

Gorgona lost to Cristobal, Saturday night at basket ball, with a score of 12 to 10. The line-up was as follows:

Cristobal.		Gorgona.
Sartor	Forward	Loudon
Schlager	Forward	Moyer
Willer	Center	Swanson
Luce	Guard and Forward	Earle
Sterner	Guard and Forward	Carpenter
Schwalenberg	Guard	Booz
Causeneau	Guard	Calvit

Next Saturday night the Gorgona team goes to Gatun.

GATUN.

Twenty-three men met on Sunday evening and discussed the subject, "Unsanitary Occupations," under the auspices of the Drop-in Discussion Club. Those who spoke were: Messrs. Hastings, Windes, J. W. Smith, Christianson, Hanson, Gilkey, and Fitzgerald. The subject for November 19, will be "Sanitary Legislation."

One hundred and twenty-five new books were received from the States on Saturday, November 11, and placed on the shelves. The books are mostly popular fiction and books for boys. The addition of these books brings the number up to the thousand mark. Any member of the club may draw books by depositing one dollar and a half.

Thirty-five men have signed up for the Spanish classes, which meet every Wednesday evening under the leadership of Senor Gomez.

The following equipment will be added to the clubhouse in the near future: New punching bag disc, private locker, one vaulting horse, one jumping board, one climbing rope, one vaulting parallel-bars and 18 plants of various kinds to be used for decorating purposes. It is purposed to purchase material for a wrestling mat cover if such can be found on the Isthmus.

A large chorus of mixed voices will be organized at the Y. M. C. A. in the course of the next few days. Mr. A. B. Dickson will act as leader.

CRISTOBAL.

The Checker Club effected a permanent organization on Thursday evening. The following officers were elected: President, H. B. Furlong; Vice-President, W. T. Harrison; Secretary, F. E. Herrington.

The Chess Club also completed its organization, electing the following officers: President, G. K. Weston; Vice-President, W. F. Morrison; Secretary, E. S. Randolph.

COMMISSARY DEPARTMENT.

For the Convenience of Bachelors.

Effective November 6, 1911, the Commissary store at Corozal will be patronized only by bachelors and laborers from 11 a. m. to 1 p. m., and from 5 to 7 p. m. Women and children who wish to make purchases should do so between 8 and 11 a. m. and 3 and 5 p. m. Bachelors and laborers will be admitted at all times when the store is open.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

There have been no material changes in the cold storage price list since its publication two weeks gao.

Red Cross Finances.

A statement of Red Cross finances for October follows:

RECEIPTS.		
October 1, On hand	$2,025.14	
October 1, Interest on cash in bank, July and August	9.59	
Total receipts		$2,034.73
DISBURSEMENTS.		
October 2, Relief of destitute family at Empire	$5.00	
October 13, Relief of wife of prisoner at Culebra	15.00	
October 23, To assist in deportation of family at Empire	100.00	
October 31, Relief of blind man at Cristobal, account of Colon fire.	25.00	
Total disbursements		$ 145.00
October 31, Balance on hand		$1,889.73

JOHN L. PHILLIPS, *Treasurer.*

Approved:
C. A. DEVOL, *Chairman.*

Family Quarters.

Applications for married quarters were on file on November 1, as follows:

DISTRICT.	List No 1.	List No. 2.
Ancon	4 (1)	46 (11)
Ancon Hospital	....	6 (2)
Balboa	....	29 (6)
Bas Obispo	1	28 (4)
Corozal	1 (1)	43 (5)
Cristobal	4	120
Culebra	....	32 (2)
Empire	1 (1)	64 (35)
Gatun	....	131 (43)
Gorgona	1	75 (27)
Las Cascadas	....	24
Pedro Miguel	1	42 (9)
Porto Bello	....	10 (9)
Toro Point	1	6 (2)
Total	14 (3)	656 (155)

NOTE—The figures in parenthesis show the number of applicants already occupying regular or nonhousekeeping family quarters at stations other than those at which applications are filed.

The following vessels arrived at, or departed from the port of Balboa during the week ending November 11:

Arrivals—November 6, *Barracouta*, from San Francisco; November 7, *Pachitea*, from Callao; November 8, *Quito*, from Guayaquil; November 8, *Limari*, from Valparaiso; November 9, *Newport*, from San Francisco; November 10, *Peru*, from San Francisco; November 10, *Leelanaw*, from San Francisco; November 10, *Babcock*, from San Francisco; November 11, *Manavi*, from Buenaventura; November 11, *Peru*, from Guayaquil.

Departures—November 7, *Quilpue*, to Valparaiso; November 8, *Chile*, to Guayaquil; November 10, *Pleiades*, to San Francisco.

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of October, follows:

DESTINATION.	Number Cars.	Cubic Yards.
Pacific Division	2,428	43,204
Central Division	29	435
Atlantic Division	40	946
Mechanical Division	1	25
Quartermaster's Department	7	175
Panama railroad	9	225
Miscellaneous	35	561
Total	2,549	45,571

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending November 22, (75th meridian time):

DATE.	High.	Low.	High.	Low.
	A.M.	A.M.	P.M.	P.M.
November 16		6.00	12.20	6.25
November 17	12.45	7.05	1.25	7.25
November 18	1.40	7.55	2.18	8.18
November 19	2.30	8.43	3.05	9.00
November 20	3.10	9.25	3.45	9.45
November 21	3.50	10.05	4.20	10.25
November 22	4.25	10.43	4.55	11.00

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon, during the week ending November 11:

Chatham, November 5, from New York, with 128,367 bags of cement, for Atlantic and Pacific Divisions.

Eva, November 5, from Mobile, with 43,000 pieces cross ties, for stock.

Allianca, November 6, from New York, with 8,500 pieces building tile, 192 bundles steel bars, for Panama Railroad Company; 21 cases pumps, for Pacific Division; 30 packages locomotive springs, 9 bundles locomotive springs, for Mechanical Division; 15 drums welding compound, 41 barrels rosin, 32 drums kerosene, 200 cases linseed oil, 1,000 kegs track spikes, 25 cases signal fittings, 83 cases lye, 8 cases chisels, 10 pieces castings, for stock; and a miscellaneous cargo, the whole consisting of 10,293 packages, weighing 337 tons.

Corozal, November 9, from New York, with 4,537 pieces steel rail, for stock.

Heredia, November 9, from New Orleans, with 61 pieces creosoted piling, for Atlantic Division; 7 cases incandescent lamps, 174 pieces white oak lumber, for Mechanical Division; 47 pieces white oak lumber, 6,526 pieces yellow pine lumber, 25 pieces untreated piling, for stock; 1,215 pieces cross ties, for Panama Railroad Company; 19 cases castings, 150 packages switch stands, 280 packages switch points, 20 cases lamphlack in oil, 53 rolls cotton duck, 924 bales rice straw, for stock.

Metapan, November 9, from New York, with 500 packages garbage cans, 11 cases hammer handles, 25 cases putty, 14 bundles iron bars, 43 pigs tin, 21 cases fuse, 70 bundles wire, 80 cases brooms, 81 bundles iron pipe, 300 cases oil, 310 drums oil, for stock; 80 casks copper, for Mechanical Division; 50 pieces steel beams, for Panama Railroad Company.

San Mateo, November 11, from New Orleans, with 376 drums gasoline, 831 pieces yellow pine lumber, for stock.

A concert will be given by the Isthmian Canal Commission Band at the Hotel Tivoli, Ancon, C. Z., on Sunday, November 19, 1911, at 7.30 p. m.

The next concert will be given at Empire, C. Z., November 26, at 6 p. m.

MOVEMENT OF OCEAN VESSELS.

NEW YORK TO CRISTOBAL.

Advance	P. R. R.	Saturday	Nov. 11
Panama	P. R. R.	Saturday	Nov. 18
Allianca	P. R. R.	Friday	Nov. 24
Colon	P. R. R.	Friday	Dec. 1
Advance	P. R. R.	Thursday	Dec. 7
Panama	P. R. R.	Thursday	Dec. 14
Allianca	P. R. R.	Wednesday	Dec. 20
Colon	P. R. R.	Wednesday	Dec. 27
Advance	P. R. R.	Tuesday	Jan. 2
Panama	P. R. R.	Tuesday	Jan. 9
Allianca	P. R. R.	Monday	Jan. 15
Colon	P. R. R.	Monday	Jan. 22
Advance	P. R. R.	Saturday	Jan. 27
Panama	P. R. R.	Saturday	Feb. 3
Allianca	P. R. R.	Friday	Feb. 9
Colon	P. R. R.	Friday	Feb. 16

CRISTOBAL TO NEW YORK.

Colon	P. R. R.	Saturday	Nov. 18
Advance	P. R. R.	Friday	Nov. 24
Panama	P. R. R.	Friday	Dec. 1
Allianca	P. R. R.	Thursday	Dec. 7
Colon	P. R. R.	Wednesday	Dec. 13
Advance	P. R. R.	Wednesday	Dec. 20
Panama	P. R. R.	Wednesday	Dec. 27
Allianca	P. R. R.	Tuesday	Jan. 2
Colon	P. R. R.	Tuesday	Jan. 9
Advance	P. R. R.	Monday	Jan. 15
Panama	P. R. R.	Sunday	Jan. 21
Allianca	P. R. R.	Sunday	Jan. 28
Colon	P. R. R.	Saturday	Feb. 3
Advance	P. R. R.	Friday	Feb. 9
Panama	P. R. R.	Friday	Feb. 16
Allianca	P. R. R.	Thursday	Feb. 22
Colon	P. R. R.	Thursday	Feb. 29

NEW YORK TO COLON.

Prinz Eitel Friedrich	H.-A.	Friday	Nov. 10
Trent	R. M.	Saturday	Nov. 11
Almirante	U. F. C.	Thursday	Nov. 16
Prinz Joachim	H.-A.	Saturday	Nov. 18
Santa Marta	U. F. C.	Thursday	Nov. 23
Prinz Sigismund	H.-A.	Friday	Nov. 24
Oruba	R. M.	Saturday	Nov. 25
Metapan	U. F. C.	Thursday	Nov. 30
Prinz August Wilhelm	H.-A.	Saturday	Dec. 2
Zacapa	U. F. C.	Thursday	Dec. 7
Prinz Eitel Friedrich	H.-A.	Friday	Dec 8
Magdalena	R. M.	Saturday	Dec. 9
Almirante	U. F. C.	Thursday	Dec. 14
Prinz Joachim	H.-A.	Saturday	Dec. 16
Santa Marta	U. F. C.	Thursday	Dec. 21
Prinz Sigismund	H.-A.	Friday	Dec. 22
Clyde	R. M.	Saturday	Dec. 23
Metapan	U. F. C.	Thursday	Dec. 28
Prinz August Wilhelm	H.-A.	Saturday	Dec. 30

COLON TO NEW YORK.

Metapan	U. F. C.	Thursday	Nov. 16
Prinz August Wilhelm	H.-A.	Tuesday	Nov. 21
Zacapa	U. F. C.	Thursday	Nov. 23
Prinz Eitel Friedrich	H.-A.	Saturday	Nov. 25
Magdalena	R. M.	Tuesday	Nov. 28
Almirante	U. F. C.	Thursday	Nov. 30
Prinz Joachim	H.-A.	Tuesday	Dec. 5
Santa Marta	U. F. C.	Thursday	Dec. 7
Prinz Sigismund	H.-A.	Saturday	Dec. 9
Clyde	R. M.	Tuesday	Dec. 12
Metapan	U. F. C.	Thursday	Dec. 14
Prinz August Wilhelm	H.-A.	Tuesday	Dec. 19
Zacapa	U. F. C.	Thursday	Dec. 21
Prinz Eitel Friedrich	H.-A.	Saturday	Dec. 23
Thames	R. M.	Tuesday	Dec. 26
Prinz Joachim	H.-A.	Tuesday	Jan. 2

NEW ORLEANS TO COLON.

Parismina	U. F. C.	Saturday	Nov. 11
Cartago	U. F. C.	Wednesday	Nov. 15
Turrialba	U. F. C.	Saturday	Nov. 18
Abangarez	U. F. C.	Wednesday	Nov. 29

COLON TO NEW ORLEANS.

Abangarez	U. F. C.	Thursday	Nov. 16
Heredia	U. F. C.	Thursday	Nov. 16
Cartago	U. F. C.	Thursday	Nov. 23
Parismina	U. F. C.	Thursday	Nov. 23

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to September 30, follows:

PERIODS.	Department of Civil Administration	Department of Law	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total.
To June 30, 1909	3,427,090.29	....	9,673,539.28	69,622,561.42	78,022,606.10	....	160,745,797.09
Fiscal year, 1910	709,351.37	....	1,803,040.95	26,300,167.05	2,863,088.83	....	31,675,648.20
Fiscal year, 1911	755,079.44	....	1,717,792.62	27,463,401.31	3,112,334.60	....	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,084,530.55	317,751.38	....	2,615,340.33
August, 1911	74,768.45	1,878.27	156,954.79	2,282,614.77	359,978.95	86,243.14	2,962,438.37
September, 1911	64,905.24	1,805.83	146,912.23	2,203,821.59	243,114.65	86,275.56	2,746,835.10
Total	5,104,090.01	6,211.45	13,635,875.70	129,957,096.69	84,918,874.51	172,518.70	233,794,667.06

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, NOVEMBER 22, 1911. No. 13.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of October is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Upper Guide Wall at Gatun Locks.

In the construction of the cellular section of the upper guide wall at Gatun Locks, that is, of the southernmost 750 feet of the center wall which extends from the upper guard gates 1500 feet into Gatun Lake, the 45 feet next the solid portion of the wall have been completed. The wall is 60 feet wide and the top is 99 feet above mean sealevel. At the outer end of the wall, and advancing toward the locks, a section 200 feet long has been built up to an elevation of 61 feet. A stiff-legged derrick has been installed on its present top and will place the concrete for the remaining 38 feet of elevation. Between these portions, the work is in various stages of advancement. About 30 per cent of the piles on which the wall is to rest have been driven. No difficulty is anticipated in having the wall built up to at least 23 feet above sealevel for its entire length by April 1, 1912, as required by the scheduled raising of the surface of Gatun Lake.

Miraflores Locks.

Hydraulic excavation for the open channel and basin south of Miraflores Locks is advancing with more satisfaction than was the case during the excavation for the lower lock chambers, the soil to the south containing less of gravel. During the month of October 52,500 cubic yards were removed by this method, making the total to November 1, 872,867 cubic yards. In this section the pumps removing the silt will be placed on stationary foundations beside sumps, it having been decided to abandon the concrete barges on which they have rested heretofore, because heavy rocks interfere with their movements. Two of the barges have been sawed to pieces and removed and the third barge will likewise be destroyed when the machinery on it is transferred by means of a track now being built. Part of the silt pumped from this section will be used for completing the hydraulic core of Miraflores Dam, but the greater part will be piped to the east of the Canal channel and used for filling in swamps. A retaining fill of earth is being thrown along the east side of the proposed Canal channel, west of the embankment for the railroad track to the Balboa sand wharf, for several hundred yards and the basin thus formed will also be filled hydraulically, to the level of the adjoining land.

The laying of concrete for the east side wall of the lower locks was begun last week, berm crane "F" having placed foundation over an area about 40 feet long and of the full base width, 28 feet.

Ancon–Sosa Swamp Reclamation.

The fill of the tidal swamp between Ancon and Sosa Hills and to the south of the Panama railroad track to Balboa, is about 20 per cent completed. Three dump tracks are in use on it. One began just south of the Panama railroad and parallel to it and is swinging radially to the south as the dump advances. Another began just north of the track leading to the Naos Island breakwater and the other Balboa dumps, and fill is made from this toward the one first mentioned. The third lies south of the Naos Island track and the fill is made toward Ancon Hill. The material used is from Culebra Cut and approximately 600,000 cubic yards will be disposed of, raising about 66 acres an average of 6 feet, with a slope from the center to afford drainage. The elimination of the swamp will improve sanitary conditions and afford a site for buildings or railway yards.

Story of the Fossils.

Another shipment of fossils collected from the excavations on the Isthmus will presently be sent to Washington for classification by the Government experts there. The collection of tertiary fossils made on the Canal work up to the present time is said by Dr. T. W. Vaughan of the U.S. Geological Survey to be the best that has ever been made in tropical America, and the information given by them and by a study of the rocks in which they occur will mark a new epoch in the geology of Central America. In fact, Dr. Vaughan said during his recent visit to the Isthmus that the geological section now being studied here contains more data of vital import to the geology of the world than that of any other section so far studied.

The University of Princeton spent many thousands of dollars in explorations in South America that had to do with the history of animal life, both prehistoric and recent, but this work like similar work carried on by other scientific bodies, has heretofore lacked the confirming evidence of geology with regard to animal migrations between North and South America. On this account biologists and paleontologists are waiting with interest for a history of the disappearing and reappearing land connection between the two Americas.

The Carnegie Institution at Washington is contemplating a study of the geology of all the countries bordering upon the Caribbean Sea, with a view to correlating and broadening the little known geology of the region. The geological work now being done on the Isthmus will form one of the standard sections of comparison in this broader work.

Gatun Spillway Dam.

Wooden forms are being placed on the west part of the Spillway for the construction of the inner shell of the concrete tunnel for machinery operating devices. On the east wing of the Spillway all the forms of the corresponding phase of this construction have been erected and about 90 per cent of the concrete has been laid. The tunnel shell is of rectangular shape with arched roof, 10 feet wide, and is 8 feet high, interior measurement. Concrete is to be laid around this form to make a shell one foot thick, and the outer walls and superstructure will be built so as to leave a space from 12 to 36 inches surrounding the shell on sides and top. The air space is to intercept seepage through the walls and assure the machinery protection from moisture. Channels at the base of the shell, between it and the outer walls, will drain off the seepage.

Repair of Dredge Spud.

One of the two holding spuds of pipe-line suction dredge *No. 83*, which is supplying hydraulic fill to the west wing of the Gatun Dam from the borrow pit below that wing, was broken on November 18, by the force of a caving-in of the bank against which the dredge was working. The dredge was towed to the coal chute trestle at the southern end of the lagoon and an emergency spud was substituted for the broken one, the metal parts of which will be attached to new timbers, forming a new spud to be reserved for emergencies. The work of substitution required the use of a 75-ton crane and it was necessary to renew some of the timber of the trestle and otherwise bolster it before the crane could be sent out on it.

Postal Business.

During the month of October there were 18,085 money orders issued, amounting to $417,576.83. Of this amount, $305,827.83 was issued payable in the United States, $110,781.39 in the Canal Zone, $907.61 in Martinique, and $60.00 in Costa Rica. The fees amounted to $1,893.08, and the amount of orders paid and repaid was $91,942.85.

Postal sales during the month amounted to $6,501.00, and newspaper postage to $16.10.

CANAL WORK IN OCTOBER.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., November 15, 1911.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of October, 1911.

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	66,031	1,314,483	136,245	1,516,759
Work excavation, wet	Cubic yards	470,400	4,704	339,815	814,919
Total work excavation	Cubic yards	536,431	1,319,187	476,060	2,331,678
No Plant excavation	....	....	....	....	....
Material placed in dams	Cubic yards	432,625	....	47,830	480,455
Concrete placed in locks and dams	Cubic yards	56,794	....	86,510	143,304
Explosives used	Tons (Gross)	53.25	192.97	35.45	281.67
Rock drilled	Feet	49,962	376,069	96,316	522,347
Tracks removed	Miles	....	8.29	....	8.29
New tracks laid	Miles	3.37	16.26	3.66	23.29
Rock crushed	Cubic yards	43,638	....	69,582	113,220
Cement used	Barrels	63,817	236	89,584	153,637
New roads built	Miles	0.43	....	....	0.43
Water mains laid	Feet	1,797	1,675	4,654	8,126
Sewers laid	Feet	....	50	461	511
Open drains and ditches dug	Feet	45,041	43,530	9,750	98,321
Average daily force	....	7,374	8,390	5,301	21,065
Average rainfall	Inches	16.72	13.42	10.69	13.52

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the Division Engineers, the inspection of which is cared for by this subdivision. Several experiments of flow of water through orifices were also conducted under supervision of this office.

LOCK GATES AND PROTECTIVE DEVICES.

Shop work in the United States—Up to the 20th of October, 35,684 tons of material had been accepted at the mills, and 20,274 tons of structural material were shipped from the shops, or about 40 per cent of the total contract. (This item in the last month's report should have been 16,431 tons, instead of 20,765 tons, as given).

Gatun—The upper guard gates (4 leaves 54 feet 8 inches high), the upper gates, and the middle gates, upper lock, (8 leaves 77 feet high) have been manufactured and practically all the material has been shipped. The safety gates and lower gates, upper lock (8 leaves 77 feet high) have been 98 per cent manufactured, and about 90 per cent has been shipped. The middle and lower gates, middle lock (8 leaves 77 feet 10 inches high) are about 12 per cent manufactured, and practically no material has been shipped.

Pedro Miguel—The upper guard gates (4 leaves 54 feet 8 inches high) have been manufactured, and practically all structural material has been shipped. The upper and middle gates (8 leaves 79 feet high) have been 98 per cent manufactured, and about 90 per cent of the material has been shipped. The safety and lower gates (8 leaves 79 feet high) have been 68 per cent manufactured, and about 45 per cent of the material has been shipped. In addition to this a considerable tonnage of castings and a few handrailings have been shipped.

Miraflores—Practically none of this material has been manufactured or shipped.

LOCK GATE ERECTION.

Gatun—Upper guard gates, 54 feet 8 inches high; leaves 37, 38, 39, and 40: These leaves were practically erected with bolts, and the interior riveting was done on October 1. The only additional work done during the month was the riveting of a total of 15 panels of sheathing in all 4 leaves, i. e., the equivalent of about one side of one leaf, making a total of 34 panels to date. There remain to be riveted on these 4 leaves, 70 panels of sheathing out of a total of 104.

Upper gates, 77 feet high; leaves 33, 34, 35 and 36: The erection bridges, which had been used at the upper guard gates, were moved into position at the upper gates October 4-7. Since then, girders and frames have been erected, but not all riveted, 3 panels high on leaves 33 and 34; 8 panels high on leaf 35, and 7 panels high on leaf 36. The girders and frames in 2 panels of leaf 35, and 2 panels on leaf 36, have been riveted up. The work of adjusting these girders has been rather tedious, owing to some extent to too great haste in erecting the several stories without proper adjustment.

Pedro Miguel—Upper guard gates, leaves 50, 51, 52 and 53: Leaf 50, the skeleton has been erected with bolts during the month from top of 7th panel to top of gate, and riveted from third panel to top of tenth, sheathing bolted on 4 panels on downstream side, but none riveted. Leaf 51—The skeleton erected with bolts from top of the first to top of the tenth panel, and riveted to top of third panel; no sheathing erected. Leaf 52—Skeleton erected with bolts from top of fifth to top of seventh panel, riveted from top of second to top of fourth panel; no sheathing bolted on. Leaf 53—Skeleton erected with bolts from top of seventh panel to top of leaf; riveted from top of fifth to top of eleventh panel; sheathing erected with bolts 10 panels on downstream side, none riveted.

The total work of the month consisted in erecting, with bolts, 13 panels of skeleton, and riveting 18 panels of the same. There remain 9 panels to bolt together and 24 to rivet, besides all the sheathing. The work on these leaves, 51 and 52, has been much delayed by non-receipt of material.

The total tonnage erected to date without regard to its being riveted or not is 2,800 tons, out of a total of about 58,000 tons, or 4.8 per cent, and the total number of field rivets 122,000 out of 6,500,000, or about 2 per cent of the total.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection as follows:

(*1*) *For the Stoney gate and cylindrical valve machines, purchased under Circular 614*—Preliminary tests have been made of the first Stoney gate valve machine erected at the shops of the contractor. In general, the machine performed its functions satisfactorily, with the exception, when working under maximum load, of a few minor details which are easily remedied; satisfactory results were obtained under the smaller loads. Complete tests have been made of the second cylindrical valve machine at the works of the contractor with motors of different manufacture and under different loads, and, with minor modifications, such as were made upon the first machine, it performs all of its functions satisfactorily.

(*2*) *For the rack railway and other material purchased under Cicular 619*—For Classes 1, 2, 3, 4, 7 and 8, under this circular, which are now under contract, the state of completion of delivery varies from 6 to 33 per cent. On all portions of this circular under contract, satisfactory progress has been made during the month, with the exception of the rack castings, and the difficulty which the contractor has experienced with shrinkage cracks and washouts has been practically overcome.

(*3*) *For the gate operating machines, Class 1, and miter forcing machines Class 2, purchased under Circular 627*—Satisfactory progress has been made with the gate operating machines, but the contractor has experienced difficulty in obtaining a suitable main casting of the casing for the miter gate forcing machine.

(*4*) *For the gate and girder hoisting machinery for the emergency dams, purchased under Circular 616*—Tests are in progress upon the three types of worm gearing hoists to be tried out as a part of this contract at the works of one of the sub-contractors.

During the month considerable material consisting of steel ties, channels and washers and other track material for the locks has been received and inspected.

The force organized for the installation of machinery and electrical equipment on the Isthmus completed two sets of wooden forms for the installation of foundation bolts for two Stoney valve machines, and installed all foundation bolts for machines Nos. 260 and 261, and foundation bolts for cylindrical valve 559. Sixty yards of concrete were placed during the month.

EMERGENCY DAMS.

The inspection work in the United States has progressed satisfactorily during the month. Up to the 20th of the month a total of 241 drawings of the turning and wedging machinery had been approved. At the works of the contractors, about 600 tons of nickel steel, and about 512 tons of carbon steel castings and forgings have been fabricated to date. Satisfactory progress has also been made on the roller bearings, all the roller bearings for one dam having been completed during the month.

AIDS TO NAVIGATION.

During the month 104 acres of land have been cleared in the Gatun lake section for sites for beacons and reference buoys, at an average cost of $10.83 per acre; 60,450 linear feet of trochas were cut; and the necessary land for making surveys was cleared and profile taken.

Work on the construction of Range 9-11, Pacific Division, continued during the month. The caisson for the front tower was completed and work on this tower will be begun at once. The tower walls, lantern, and lantern roof of the rear tower are in place, and the newel post for the circular stairs was constructed to a height of 12 feet during the month. Construction of the foundation for the front tower of Range 13-14 in the same division was started during the month.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month one shovel was engaged on borrow pit excavation for the locks backfill, 21,723 cubic yards of material being removed.

Backfill—Backfilling behind the side walls of the upper, middle and lower locks, and in the center wall of the upper lock, was continued. The quantity placed during October aggregated 114,740 cubic yards, increasing the total to 913,466 cubic yards. On October 31 the backfilling was 56.82 per cent completed.

Receiving and Issuing Material—The consumption of rock exceeded the receipts by 5,637 cubic yards, and the receipts of sand and cement exceeded the consumption.

Mixing and Placing Plants—Both plants, and all portable mixers, were kept in satisfactory operation during the month.

Power Plant and Pumps—The operation of the power plant and pumps was satisfactory.

Iron and Steel Work—During the month 335.8 tons of fixed steel and 133,437 feet of reinforcing rods were placed; 65.8 tons of reinforcing rails and 150 feet of electric return track were laid.

Concrete Work—There was a decrease of 3,662 cubic yards in the amount of concrete laid as compared with the figures for the preceding month. The daily average for the 26 working days was 2,063 cubic yards, as compared with a daily average during September of 2,292 cubic yards. The total amount of concrete placed during the month was 53,636 cubic yards, including 1,424 cubic yards of large stone. The bucket measurement exceeded the place measurement by 634½ cubic yards. Of the total concrete, 6,541 cubic yards were placed in the upper lock, 5,289 cubic yards in the middle lock, and 41,806 cubic yards in the lower lock. The concrete work for the entire lock system was 83.68 per cent completed at the end of October.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)..	11.48	8.50
Average number of hours per day worked, per strand of cableway laying concrete and large stone (actual working time)	5.49	....
Average number of mixers per day	5.00	2 00
Average hourly output per mixer (actual working time), cu. yds.	59 91	63.65
Average amount of concrete and large stone laid per hour, per strand of cableway (actual working time) cu. yds.	33.80	....
Large stone laid, cu. yds	1,424	....
Concrete laid, cableways, cu. yds.	39 478	....
Concrete laid, through chute into dump cars, cu. yds.	1,830	....
Concrete laid, derricks, cu. yds..	....	4,074
Concrete laid, dump cars, cu. yds	....	5,808
Concrete laid, portable mixers..	....	1,656.5
Total amount of concrete and large stone laid, cu. yds	42,732	11,538.5

GATUN DAM.

Construction during the month increased the total fill, as determined by cross sections of the material in place, by 432,625 cubic yards, making the total amount in place 16,200,725 cubic yards.

Hydraulic Fill—The dredges increased the hydraulic fill by 214,320 cubic yards. The total hydraulic fill in place October 31 was 8,472,486 cubic yards.

Dry Fill—The material received from the Central Division and from steamshovels Nos. 116 and 134, amounting to 218,305 cubic yards was placed on the north and south toes of the dam, east and west of the spillway, making the total dry fill in place 7,728,266 cubic yards.

GATUN SPILLWAY.

Excavation—In preparing foundations for the spillway dam, 112 cubic yards of rock were removed by hand. On October 31, the total spillway excavation amounted to 1,586,296 cubic yards.

Concrete—The work of placing concrete was continued. The amount placed during the month aggregated 3,158 cubic yards, which increased the total to 162,539 cubic yards. The concrete work for the spillway was 72.23 per cent completed.

HARBOR AND CHANNEL SECTION.

Excavation below sea level at Mindi—During the month two steamshovels removed 6,570 cubic yards of earth and 59,349 cubic yards of rock from the canal prism.

Dredging from the Ocean to Mindi—Six dredges removed 432,653 cubic yards of earth and 37,747 cubic yards of rock from the canal prism. On October 31st 40 feet of water could be carried from Zero to Zero plus 1,900 feet; 35 feet to Mile 3 plus 2,400 feet; 30 feet to Mile 3 plus 3,600 feet; 20 feet to Mile 5 plus 2,438.9 feet, at the junction with the French Canal.

PORTO BELLO.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day, hours	8.00
Average number of hours worked per day..	4 06
Average number of cubic yards per hour of working day	209.79
Average number of cubic yards per working hour	413 08
Maximum day's output (5 hours 30 minutes) cu. yds.	2,358.00
Average day's output (26 days) cu. yds....	1,678.38
Average hourly output (193 hours 50 minutes, cu. yds	225.13
Total output for the month, cu. yds	43,638.00

SAND, STONE, AND CEMENT SERVICE.

In connection with this service plant steamed 6,250 miles, handled 780 barges, and carried 2,565 passengers.

WEST BREAKWATER, COLON.

Twenty three thousand seven hundred and sixty-five cubic yards of material were excavated, of which amount 21,815 cubic yards were placed in the breakwater, 150 cubic yards were used for breakwater track, and 1,800 cubic yards for fortification track fill. The double track trestle was extended 335 linear feet. On October 31 the trestle extended 7,467 linear feet from shore. The total amount of rock dredged and dumped on the west breakwater to October 1, 1911, was 726,717 cubic yards. During the month 37,747 cubic yards of rock were dredged and dumped, increasing the total to 764,464 cubic yards. The amount of dry fill placed to November 1 was 506,655 cubic yards.

NOMBRE DE DIOS.

During the month 81 barges, containing 38,928 cubic yards of sand, were shipped to Gatun.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Central Division.

During the month of October the total amount of material excavated in the Central Division was 1,322,588 cubic yards, of which 189,482 cubic yards were classified as earth and 1,133,106 cubic yards as rock. Of this quantity 1,309,752 cubic yards were removed by steamshovels, 620 cubic yards by bucket crane, and contractors removed 4,704 cubic yards by sluicing and 7.512 cubic yards by hand. Of the total, 1,319,187 cubic yards consisted of primary excavation for the canal prism, and 3,401 cubic yards was excavation for tracks outside of prism

The daily average number of steamshovels at work during the month was 41.46, and the total number of shovel days was 1,078, as compared with 42.00 at work during the month of September, with 1,050 shovel days.

For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work	W'k'g days.	Av. yards per shovel day.
		Rock.	Earth.			
1910:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
Oct.....	1,598,335	1,076,678	521,657	47.50	26	1,294.20
1911:						
Oct.. ..	1,309,752	1,124,974	184,778	41.46	26	1,215.00

Rainfall at Empire: 1910, 12.57 ins.: 1911, 14.97 ins.

The above table shows the average output per shovel to be 6.12 per cent greater in October, 1910, than in the corresponding month of the present year.

The total amount of material excavated from the prism in the Culebra Section of the Central Division in October, 1911, 1,310,373 cubic yards, was the highest record in that section for the month of October, except October, 1910, when 1,320,314 cubic yards were removed.

The total estimated amount of material to be removed in the Central Division, according to the revised estimate of July 1, 1911, was 101,801,296 cubic yards, and up to November 1, 1911, 82,843,278 cubic yards had been removed, leaving 18,958,018 cubic yards to be removed in order to complete all excavation in the Central Division. From these figures it will be seen that 81.38 per cent of all excavation in the Central Division had been completed up to the close of the month of October, and 18.62 per cent remained uncompleted.

Considering the two sections which compose the Central Division, the excavation completed and that to be completed at the close of October operations were as follows:

CULEBRA SECTION.	*Cu. Yds.*
Completed	70,942,244
To be completed	18,501,761
CHAGRES SECTION.	*Cu. Yds.*
Completed	11,901,034
To be completed	456,257

From the above figures it will be seen that the Culebra Section, locally known as the "Culebra Cut," was 79.32 per cent completed, with 20.68 per cent to be completed; the Chagres Section was 96.31 per cent completed, with 3.69 per cent to be completed.

During the month 8,379 cubic yards of material were hauled from the canal prism and dumped in the embankment for the roadbed of the relocated Panama Railroad. The total amount of spoil from the Central Division used for this purpose at the close of the month was 3,962,807 cubic yards. The Central Division also delivered at Gatun 201,828 cubic yards of rock and earth, and 11,519 cubic yards were delivered to the Atlantic Division at Matachin, for use in the construction of the dam, making the total for this purpose at the end of October, 4,669,618 cubic yards.

During the month 21,660 cubic yards of rock and earth were delivered to the Pacific Division for use as backfill for the Pedro Miguel locks.

The daily average number of laborers at work on the whole Division during the month was 7,602, and the daily average number of gold employes was 788.

Pacific Division.

DISTRICT NO 1—LOCKS AND DAMS.

Excavation—The total excavation during the month amounted to 136,245 cubic yards, of which 10,070 cubic yards were classified as earth, and 126,175 cubic yards as rock.

Filling and Embankment—During October, 3,400 cubic yards of dry filling were added to the prism of the west dam at Pedro Miguel, increasing the total amount of material in place at the close of the month to 308,381 cubic yards. The backfill at Pedro Miguel was increased by 53,800 cubic yards, the total in place at the end of the month amounting to 403,300 cubic yards.

At Miraflores, 37,250 cubic yards were added to the dry fill in the toes, and 7,180 cubic yards to the hydraulic fill in the core of the west dam, making the totals at the end of the month 1,014,847 cubic yards and 646,278 cubic yards respectively. The backfill was increased by 31,850 cubic yards, the total aggregating 235,388 cubic yards at the end of the month.

Pedro Miguel Locks—The general backfilling of the west wall was practically completed at the end of the month. Tracks were laid prepatory to cutting in a steamshovel to excavate the hill back of the east lock wall, the spoil from which will be cast over and used for backfill. The filling in of the middle wall with sand and screenings was continued. The amount of iron placed in the masonry aggregated 90,394 pounds.

CONCRETE WORK—The total amount of concrete and large stone laid at Pedro Miguel was 25,637 cubic yards, as compared with 15,379 cubic yards during September. The concrete was placed as follows: 2,363 cubic yards in the floors; 377 cubic yards in the northwest wing wall; 590 cubic yards in the north center guide wall; 8,050 cubic yards in the east wall; 5,607 cubic yards in the center wall; and 8,650 cubic yards in the west wall.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT PEDRO MIGUEL.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	2.73	4.88
Average number of mixers per day	....	6.00
	Cu. Yds.	Cu. Yds.
Average hourly output per mixer (actual working time)	....	27.00
Average amount of concrete and large stone laid per hour, per chamber crane (actual working time)	43.46	....
Large stone laid	....	12.00
Concrete laid	6,165.00	19,460.00
Total concrete laid	6,165.00	19,472.00

Permanent plant consisted of two chamber cranes, placing.

Auxiliary plant consisted of three 2-cubic yard and four ½-cubic yard mixers; the latter discharging directly into forms. Locomotive cranes and derricks, averaging 3.8 units a day, were used in placing.

Miraflores Locks—The final berm crane was erected, and began placing concrete during the latter part of the month. Dry excavation was continued in the lower lock, eight steam shovels being employed. The backfilling of the east and west walls, also filling on east and west toes of the west dam were continued. Work was continued on the construction of concrete caisson shells for foundation piers of the north center guide wall, and the sinking of the first three caissons was begun during the month. During the month the amount of iron placed aggregated 1,013,506 pounds.

CONCRETE WORK—The total amount of concrete and large stone laid at Miraflores was 60,873 cubic yards, as compared with 56,083 cubic yards during September. The concrete was placed as follows: 453 cubic yards in the north center wall; 9,279 cubic yards in the east wall; 34,608 cubic yards in the center wall; 13,551 cubic yards in the west wall; and 2,982 cubic yards in the floors.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	6.36	6.44
Average number of mixers per day	6.65	5.85
	Cu. Yds.	Cu. Yds.
Average hourly output per mixer (actual working time)	37.01	34.35
Average amount of concrete and large stone laid per hour, per berm, or chamber crane (actual working time)	60.72	....
Large stone laid	....	....
Concrete laid	49,821.00	11,052.00
Total concrete laid	49,821.00	11,052 00

Permanent plant consisted of three berm and two chamber cranes.

Auxiliary plant consisted of two 2-cubic yard mixers, and ½-cubic yard mixers averaging 3.85 a day; also locomotive cranes, placing, averaging .73 per day.

DISTRICT NO. 2—DREDGING.

The following is a statement of the output of the five dredges which were in operation during the month, and the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.		PLANT.		Total.	Remarks.
		Earth.	Rock.	Earth.	Rock.		
		Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	
Cardenas	Dipper	2,452	21,120	....	....	23,572	Place measurement
Marmot	Ladder	4,869	6,889	....	....	11,758	Place measurement
Badger	Ladder	41,341	....	....	....	41,341	Scow measurement
Mole	Ladder	2,950	17,000	....	....	19,950	Scow measurement
Culebra	Suction	209,244	....	....	....	209,244	Scow measurement
Total	....	260,856	45,009	....	....	305,865	
Hydraulic excavation	....	*52,500	....	....	....	52,500	Place measurement
Grand Total	....	313,356	45,009	....	....	358 365	

*Excavated from Canal prism, south of Miraflores lock site.

Chamé Sand Excavation—Approximately 45,534 cubic yards of sand were excavated at Punta Chamé and delivered at Baboa.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Work was resumed on the Panama street improvements.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours)	8.00
Average number of hours per day (actual working time)	7.10
Average number of cubic yards crushed per hour of working day	334.50
Average number of cubic yards crushed per working hour	376.90
Total output for the month, cubic yards	69,582.00

(Includes 5,136 cubic yards omitted in September.)

Relocation of Panama Railroad.

During the month 375,810 cubic yards of material were excavated, increasing the total excavation at the close of the month to 8,954,038 cubic yards, and 409,145 cubic yards of material were placed in embankment, increasing the total for this purpose to 14,811,317 cubic yards.

The average daily number of steamshovels at work was 10.38, and the total number of working days was 26.

For comparison with the work done by steamshovels during the preceding month, and the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'k'g days.	Av. yards per shovel day.
		Rock.	Earth.			
1910:	Cu. Yds.	Cu. Yds.	Cu. Yds.			C. Y.
Oct.	238,349	116,608	121,741	6.00	26	1,528
1911:						
Sept.	343,770	186,155	157,615	9.44	25	1,457
Oct.	367,085	229,865	137,220	10.38	26	1,360

No temporary trestle was driven during the month. Work on bridges and culverts was continued. No permanent track was laid during the month, the amount of 70-pound and 90-pound track remaining at 134,600 and 42,043 linear feet respectively. The force averaged 2,406 men.

Quartermaster's Department.

LABOR.

No contract laborers were received during the month. A large number of Spaniards came over on their own account, over 400 arriving on one steamer of the French line. Of this number, over 175 were assigned to the work, some of the remainder returning to Europe.

QUARTERS.

Laborers' quarters at Miraflores were completely filled, and additional barracks were opened at Corozal to relieve the congestion.

The San Pablo district has been vacated, there remaining but one family in I. C. C. quarters.

Sixty-five buildings were advertised for sale in the Tabernilla-San Pablo-Bohio district, of which 47 were sold, the total amount realized being $3,052.75. Forty-three buildings remain unsold in the lake area.

The 10th Infantry arrived on October 5, and is occupying quarters at Camp E. S. Otis, in the Las Cascadas district.

BUILDINGS.

The bathroom addition to the Hotel Tivoli was completed, and work on the new wing is under way.

Work was commenced on the caretaker's house at Brazos Brook. This is to be a concrete house of the No. 17 type, and is intended as permanent quarters.

MATERIAL AND SUPPLIES.

The value of material received from the United States during the month was $852,825.91, as compared with $581,348.64 during September, 1911. Supplies during the month were delivered by 36 steamers, the total weight of cargo aggregating 32,425 tons, exclusive of 889,882 feet B. M. Douglas fir lumber, 1,206,721 feet B. M. yellow pine lumber, 55,494 feet B. M. white oak lumber, 3,004 pieces of piling, and 2,700 cross ties.

Subsistence Department.

The operation of the European laborers' messes, the colored laborers' kitchens and the line hotels showed a net profit of $3,707.58. The operation of the Hotel Tivoli showed a net profit of $1,722.41, and there was a net profit on restaurants, penitentiary, tugs and dredges of $103.28. The net profit on subsistence operations was $5,533.27.

Department of Civil Administration.

COURTS.

During the month 16 civil and 61 criminal cases were disposed of in the Circuit Courts, and 81 civil and 645 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for October amounted to $417,589.83, and the fees to $1,893.18. Receipts from stamp and card sales, and newspaper postage aggregated $6,517.10. The total collection of revenues made by the division was $14,418.94, and the collection on account of court fines costs and fees, $3,499.12.

Thirty-one vessels entered at and 28 vessels cleared from the port of Ancon: and 17 vessels entered at and 16 vessels cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 629, of whom 592 were men and 37 women. Twenty-five nations, or 47 separate states and dependencies, were represented. The total number of arrests for the month was an increase of 37 as compared with month of September. Sixteen convicts were committed to the penitentiary, and 13 were discharged, leaving 136 in confinement at the close of the month. The cost of guarding and subsisting the convicts was $2,738.45, and the value of their work on Canal Zone roads $2,042.30.

DIVISION OF FIRE PROTECTION.

Seven fires were reported in the Canal Zone during the month, as compared with 12 in September. The damage to Commission property was $2.00.

DIVISION OF PUBLIC WORKS.

In the city of Panama the average daily consumption of water was 1,369,911 gallons, and in Colon 957,830 gallons.

The usual inspection and maintenance work of this division was performed during the month.

DIVISION OF SCHOOLS.

The schools were reopened on October 2. A new white school was opened at Las Cascadas, with an enrollment of 33 pupils. The white school at Tabernilla was discontinued, on account of canal operations, and the children from that district were sent to the Gatun school. New colored schools were opened at Miraflores, Cucaracha, Mandingo and Marajal, and colored schools were abolished at Balboa, San Pablo, Tabernilla, Bohio, Playa de Flor and Las Cascadas. The total enrollment in the white schools during the month was 1,174, and the average daily attendance 972.7, or 83 per cent of the enrollment; and in the colored schools the total enrollment was 931, and average daily attendance 568, or 61 per cent. Forty-three white and 24 colored teachers were employed in the division on October 31.

Department of Sanitation.

The total number of deaths from all causes among employes was 46. These were divided as follows: From disease, 38, and from violence, 8, giving the annual average per thousand of 9.15 and 1.93, respectively.

The annual average death rate per thousand among employes for the month of October in previous years since American occupation was as follows:

1904	20.31
1905	32.85
1906	46.68
1907	25.97
1908	12.93
1909	9.95
1910	10.19

The annual average death rate per thousand in the cities of Panama, Colon and the Canal Zone, including both employes and non-employes, was 21.35.

The annual average death rate per thousand for the month of October among the same class of population for previous years was as follows:

1905	56.62
1906	46.40
1907	30.19
1908	27.91
1909	16.62
1910	23.61

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was, for whites, 4.87; blacks, 10.56; giving a general average of 9.15. For the same month during 1909, the annual average death rate per thousand from disease was, whites, 3.16; blacks, 8.56, giving a general average of 7.35, and for the same month during 1910, whites, 4.51; blacks, 5.98, giving a general average of 5.58.

Among employes during the month deaths from the principal diseases were as follows: Chronic nephritis, 3; dysentery, clinical, 1; haemoglobinuric fever, 1; lobar pneumonia, 13; malaria, 1; tuberculosis, 6, leaving a balance of 13 deaths from all other diseases, and 8 deaths from external violence.

Deaths from pneumonia have occurred almost exclusively among colored laborers recently brought to the Zone from the West Indies, as was the case in 1906 when an epidemic of the disease prevailed.

No case of yellow fever, smallpox, or plague originated on the Isthmus during the month. There was one death from bubonic plague of septicæmic variety at Ancon Hospital on October 17. The victim, a former employe of the Commission, left Guayaquil on October 7, on the steamship *Chile*, arriving at the quarantine station in the Bay of Panama on October 11. He was sick on the voyage, and had fever during the time he was in quarantine and when discharged. His case was diagnosed as malaria, from which he had been suffering while in Ecuador, according to a certificate furnished by the Marine Hospital surgeon in Guayaquil. He was discharged from quarantine October 13; was admitted to Ancon Hospital the same day, and died on October 17. The case revealed no external lesions of the disease, and was diagnosed at autopsy from smears taken from the spleen and femoral glands.

Respectfully,

GEO. W. GOETHALS, *Chairman.*

LIGHTING THE CANAL.

Progress of Work and Plans for its Execution.

Work on the project for lighting the Canal and placing buoys and daymarks was begun in April, 1911, and it is advancing in accordance with the schedule made in June. Surveys and clearing the land of obstructing trees and foliage are almost completed, and the construction of range light towers is under way.

A report outlining the project was published in THE CANAL RECORD of April 19, 1911. The scheme of illumination contemplates the use of range lights to establish direction on the longer tangents, and of side lights spaced about one mile apart to mark each side of the channel. The range lights are omitted in Culebra Cut, where their use is hardly practicable, and on four of the shorter tangents on the remainder of the Canal. The project includes a light and fog signal on the west breakwater in Limon Bay, a light on the east breakwater, should it be built, and gas and nun buoys lighting and marking the channel to the Mount Hope dry dock. Acetylene gas will be used for the lighted buoys in all the sections of the Canal, and for the beacons in the Gatun Lake section. For the beacons in the Atlantic, Pacific, Miraflores, and Culebra Cut sections, electricity or acetylene gas is to be used. The work is under the First Division of the office of the Chief Engineer, Assistant Engineer W. F. Beyer being in immediate charge.

CLEARINGS.

Reference to the map showing the layout of lights and beacons, published in this issue, will reveal the nature of the clearings. At each tangent, it is necessary to have two ranges, of two lights each, to prolong the sailing line, in order that the pilot may hold his course up to the point of turning. The range lights are situated on land, and it is necessary to cut a trocha through the jungle until suitable locations for the lights are found. These trochas are the width of the canal at their beginning and taper down to about 400 feet in width at the end. Surveyors run the lines, and then the clearing gang is set at work. Three surveying parties of ten men each have been employed, and the clearing gang consisted of about 100 men up to August, and since then of about 50 men. The work accomplished up to November 1 is indicated in the following table:

MONTH	Acres cleared	Trocha cut	Profile taken	Line run
		Feet.	*Feet.*	*Feet.*
April	51.0	....	....	....
May	145.5	64,825	10,200	....
June	177.0	57,350	6,000	....
July	146.2	50,720	28,869	....
August	133.0	45,040	4,478	*73,000
September	80.5	42,200	17,226	17,300
October	104.0	60,450	....	....
Total	837.2	320,585	66,773	90,300

*Center Line.

There remain to be cleared about 200 acres, composed of small areas in various sections. One of the longest areas to be cleared is that at the Frijoles tangent on the range-line for northbound ships. It is about 14,000 feet, or nearly three miles long, 1,000 feet wide at its beginning and 400 at the end. To find an elevation for the lights on this tangent it was necessary to cut through dense jungle and forest. The shortest area cleared is about 1,800 feet, and the others vary between these two extremes, local conditions determining in each instance.

CONSTRUCTION OF TOWERS AND BEACONS.

The construction of range towers was begun in the Pacific entrance, and is being carried on in accordance with the following schedule:

To June 30, 1912—Construct foundations and towers for Ranges Nos. 1-2, 9-11, and 13-14 of the Pacific section; foundations and towers for Ranges Nos 5-6, and 7-8, Atlantic section; foundations, towers and boat landings for Ranges Nos. 1-2, 11-12, 21-22, and 29-31, and foundations for beacons Nos. 19, 20, 23, 26, 27, 28, 30, and 32 in Gatun Lake section. Establish a central plant at Balboa, at which place the smaller beacons, buoy sinkers, electric transmission poles and interior fittings for the towers will be constructed of reinforced concrete.

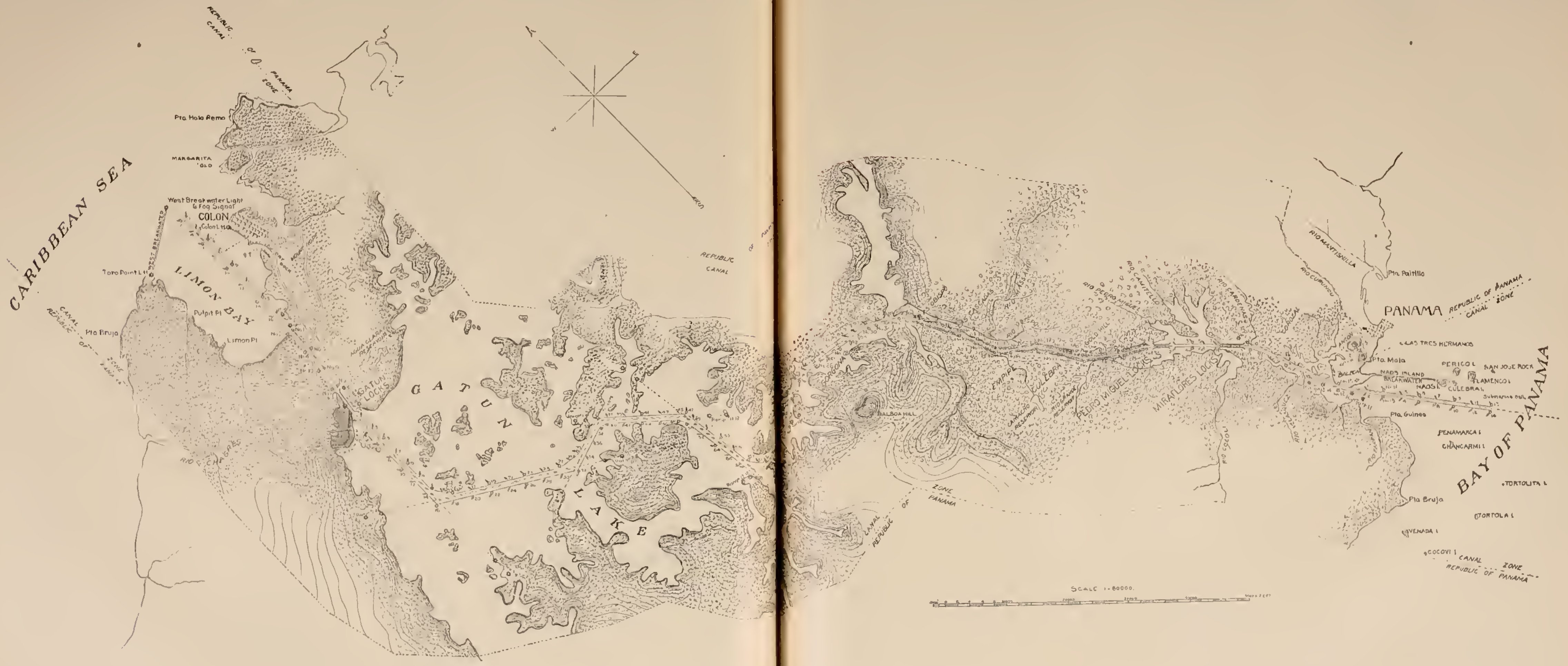
To June 30, 1913—Complete the installation of beacons in the Atlantic and Pacific sections; as soon as the water is sufficiently high in Gatun Lake to permit the hauling of materials to the sites in barges, construct range towers in that section; erect reference targets. These reference targets will be part of the system of permanent marks on shore by which the location of the gas buoys will be established.

The construction of the light on the west breakwater at the Atlantic entrance will be governed by the status of the work on the pierhead, and of that of Range No. 1-2, Gatun Lake section, which will be on the south guide wall of Gatun Locks, by the status of work on the upper locks. During the fiscal year ending June, 1913, it is purposed also to construct the buoy depot on Gatun Lake, install the electric transmission lines required for the ranges and beacons, manufacture spar buoys, and construct the light keepers' dwellings.

Foundations for the range towers are of various types, depending on local conditions, and are exemplified in the foundations for Ranges Nos. 9-11, and 13-14 in the Pacific Division. The rear tower of Range No. 9-11, the focal plane of which is 56 feet above mean tide, is founded upon the rocks at Farfan Point, which at low tide are dry and at high tide are partly inundated. Loose rock was placed upon huge boulders and outcropping bed rock, and carefully leveled off at a height of 17 feet above low tide Upon this rock a hollow foundation pier, 24 by 24 feet in plan and 5 feet high, was constructed of reinforced concrete, the walls being 12 inches thick, thus making the deck of the pier 22 feet above low tide. The tower is built upon the deck of this pier. The front tower is founded upon a reinforced concrete caisson which rests upon 25 bearing piles, driven through the mud flats to bed rock, about 25 feet below the surface The butts of the wooden piles are protected with an armor of concrete from the surface of the mud flats to within about two feet above low tide and are capped with a concrete slab platform 12 inches thick and 26 feet square, reinforced with old T-rails and round bars. The caisson is 24 feet by 24 feet in plan, and 15 feet high, the bottom being 12 inches thick and heavily reinforced. The walls and tie walls are also 12 inches thick, and reinforced. The deck is 6 inches thick. The lower eight feet of the caisson was constructed on the shipways at Balboa, and after the concrete had sufficiently hardened the caisson was launched, and at high tide towed out to the site. When in position it was securely moored by means of four hawsers leading to anchors previously placed. the valves at the bottom of the caisson walls were opened to allow the water to enter, and thus it was gradually sunk onto the concrete platform. Sufficient ballast rock was then placed in the caisson to keep it in position, and the remaining seven feet of concrete walls, and the deck were constructed. The bottom of the caisson is seven feet above low tide and the deck is 22 feet above. At low tide the entire caisson is exposed. The sand around the base is protected against scour by rip-rap.

The front light of range No. 13-14, the focal plane of which is 56 feet above mean tide, is founded upon an octagonal foundation pier 24 feet between parallel sides, and 6 feet high, resting upon 29 bearing piles driven into the alluvial soil to refusal. The piles are armored and capped in similar manner to those of the foundation just described. The bottom of the foundation pier is 16 feet above low tide and its deck is 22 feet above. The rear tower is founded upon firm ground at the southeasterly end of Naños Island, the foundation consisting of a concrete slab 20 inches thick heavily reinforced.

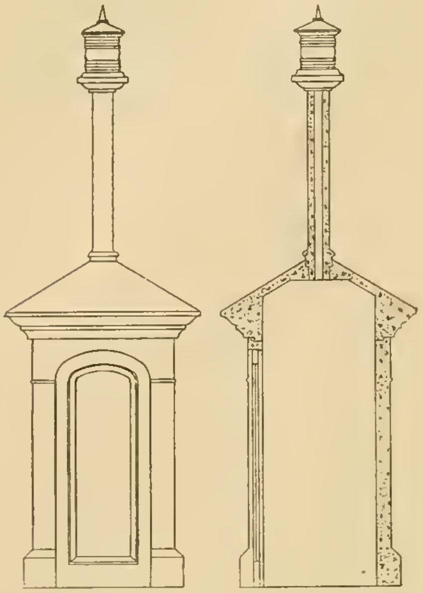
The towers are constructed by means of steel forms, which are designed to be used for the three types of towers used in the Atlantic and Pacific sections. They consist of sections four feet high, of such size as to be easily handled by two laborers. The forms for the octagonal base are first set up and filled with concrete, after which the bottom ring of the conical portion of the tower is set up and filled, and then a second ring is set up and filled. After the concrete in the lower ring has set, the forms are stripped and set up on top of the second ring, and filled. The second ring is taken off and set up on top of the preceding, and so on to the belt course below the watchroom. The forms for the watchroom and lantern are then set up and filled with concrete. All the work is carried on from a scaffold tower inside the tower. In this way the tower rises at the rate of four feet per day. Wooden forms are placed between the interior and exterior steel forms for the purpose of coring out openings for doors and windows, which openings are later trimmed with concrete architrave moldings. sills, and lintels. The circular stairway in the tower is con-


CARIBBEAN SEA
REPUBLIC CANAL
ZONE PANAMA
Pta. Holo Remo
MARGARITA I. OLD
West Breakwater Light & Fog Signal
COLON
Colon Lt. Ho.
Toro Point Lt.
WEST BREAKWATER
LIMON BAY
Pulpit Pt
Limon Pt
Pta Bruja
CANAL ZONE REPUBLIC OF PANAMA
GATUN LOCKS
GATUN LAKE
REPUBLIC CANAL
BALBOA HILL
EMPIRE
CULEBRA
PEDRO MIGUEL LOCKS
MIRAFLORES LOCKS
RIO MANTISNILLA
RIO CURUNDU
Pta. Paitillo
PANAMA
REPUBLIC OF PANAMA CANAL ZONE
LAS TRES HERMANOS
Pta. Mala
PERICO I.
SAN JOSE ROCK
NAOS ISLAND BREAKWATER
FLAMENCO I.
NAOS I.
CULEBRA I.
Pta. Guinea
PENAMARCA I.
CHANCARMI I.
BAY OF PANAMA
TORTOLITA I.
Pta Bruja
TORTOLA I.
VENADA I.
COCOVI I.
CANAL ZONE REPUBLIC OF PANAMA
SCALE 1:80000

MAP SHOWING LIGHTING S M OF THE PANAMA CANAL.

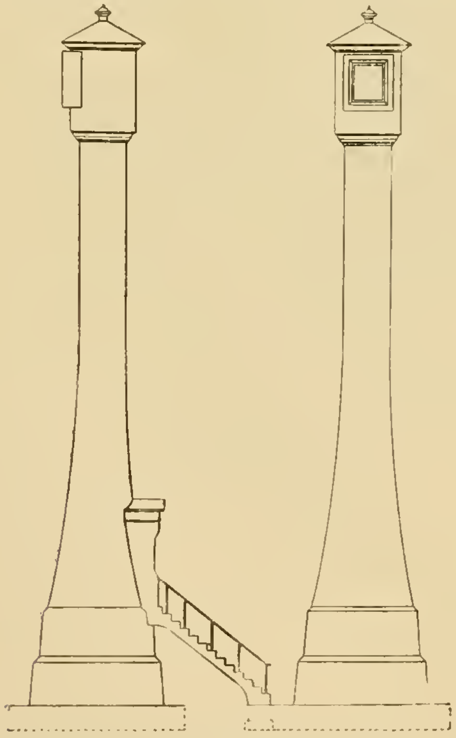
LARGE STAR INDICATES RANGE LIGHT. SMALL STAR AND BLACK LOZENG DICATE LIGHTED BUOY. LOZENGE MARK ALONE INDICATES UNLIGHTED BUOY.

structed entirely of reinforced concrete, the newel post being cast in place as the tower walls rise, and the stair treads and spiral stair string being cast in units at the central plant at Balboa. After the parts last named are sufficiently hardened they are taken to their respective towers and set in place, the stair string being supported by concrete beams placed radially between the newel post and tower walls and supported by them.



REINFORCED CONCRETE BEACONS FOR CULEBRA CUT, GATUN LAKE AND ATLANTIC AND PACIFIC SECTIONS.

The beacon shown is 15 feet high from base to focal plane, 5 feet 6 inches square at cornice of roof, 4 feet square below roof. Light post is of reinforced concrete, outside diameter 8 inches; inside 3 inches.



REINFORCED CONCRETE RANGE TOWERS FOR GATUN LAKE SECTION.

Heights vary from 30 to 50 feet from base to focal plane. This plain type of tower will be erected at points some distance from the channel.

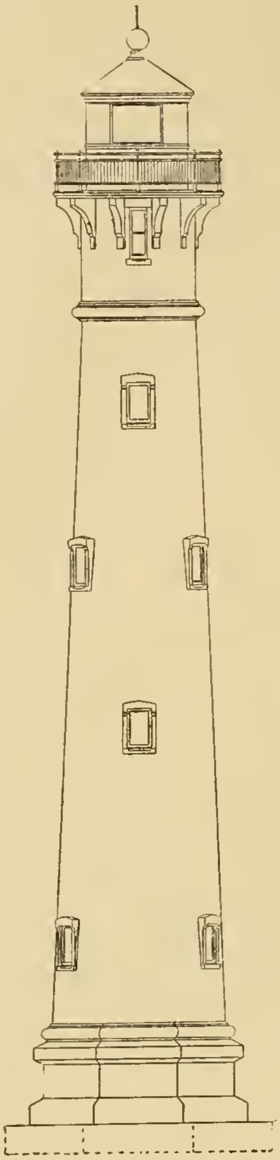
The only exposed metal on the towers consists of the gallery railing, lantern door and sash, and ventilators, all of which are made of rust-resisting iron, and bronze, and the cast iron ball ventilator at the apex of the tower.

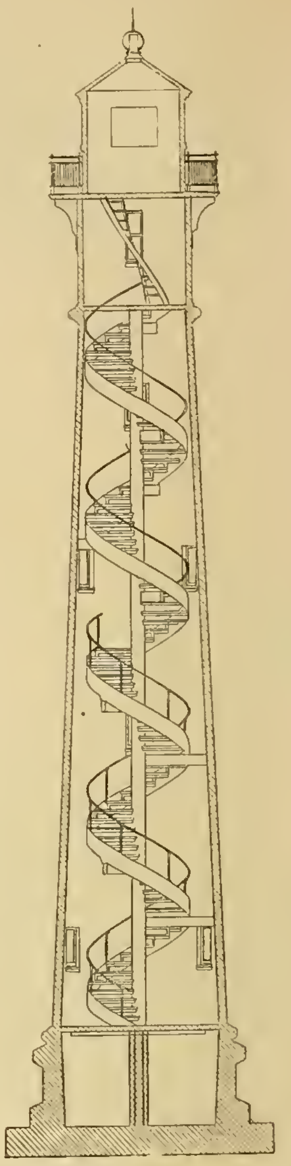
The lantern is supplied with slide ventilators by means of which circulation of the air may be regulated, thus insuring a steady flame in the lantern.

The material entering into the construction of the towers in the Pacific Division is loaded at Balboa upon a large lighter which is towed to the several sites. In the case of the two submarine sites for Range No. 9-11, the lighter was moored alongside the foundations and the work of construction carried on from the lighter.

The beacons for Culebra Cut, from Bas Obispo to Pedro Miguel, and along the sides of the channels in the Atlantic and Pacific Division and Gatun Lake section are 4 feet by 4 feet in plan, 7 feet high to cornice, and are to be constructed of reinforced concrete, surmounted by a concrete post or column which will support the lens. They will be cast in sections at the central plant and later taken to their respective sites and set up. Those in Gatun Lake will be equipped for acetylene gas and the balance for electricity. The range towers for the Gatun Lake section are to be constructed in a similar manner to the towers in the Atlantic and Pacific divisions.

The material estimated as necessary for the towers and beacons is 105,900 pounds of reinforcing iron, 2,983 barrels of cement, 1,025 cubic yards of sand, 1,865 cubic yards of crushed rock, 45,000 board feet of lumber. The mixture for reinforced concrete is one part cement, 2 sand, 4 rock; for mass concrete 1: 3: 6.





REINFORCED CONCRETE RANGE TOWER FOR ATLANTIC AND PACIFIC SECTIONS.

This ornate type will be used in places near the channel. The heights of these towers vary from 29 to 74⅓ feet from base to focal plane. The tower shown is 74 feet 4 inches from base to focal plane, 16½ feet in diameter at base, and 7½ feet at focal plane.

BUOYS AND LIGHT POWER.

It has not yet been determined what gas buoys will be installed, but bids will soon be asked for this part of the system of lighting. Such buoys as will be required are composed of a cylindrical floating body or tank, surmounted by a steel frame which supports the lens at a height of about 15 feet above water level. The body is about 8 feet in diameter, to the bottom of which is attached a counterweight of suitable size to maintain the lantern frame in an upright position at all times. The buoys will be moored in position along the edge of the dredged channel by a heavy chain and a concrete sinker, and will remain lighted from 6 to 12 months without being recharged.

The candle power of the lights will vary according to the length of the range; being from about 2,500 to 15,000 candle power. The most powerful lights will be those marking the sea channels at the Atlantic and Pacific entrances, they being visible from about 12.5 to 18 nautical miles. The beacons and gas buoy lights will be about 950 candle power.

To eliminate the possibility of conflicting the lights with one another and with lights ashore, all the range lights, beacons, and buoys will have individual characteristics formed by flashes and combinations of flashes of light and dark intervals.

Canal Zone Census.

Edward Koch, a chief of division in the Bureau of the Census, has been appointed to direct the census of the Canal Zone under the Department of Civil Administration. It is expected that the preliminary work will begin next month.

The California-Atlantic steamship *Navajo* will sail, on its next departure from Balboa, direct to Pearl Harbor, Hawaiian Islands, with a full cargo of about 2,500 tons of structural iron for use in Government work there. This will be the first cargo shipped from Balboa to that port during the American occupation of the Zone. From Pearl Harbor the *Navajo* will sail for San Francisco, by way of Honolulu.

POSTAL SAVINGS SYSTEM.

Rules that will be Followed in Receiving Deposits.

The Postal savings system in the Canal Zone, without the payment of interest on the deposits, established by authority of Executive Order of September 8, 1911, will be conducted after the manner in which the system is being conducted in the United States, with the exception of a few changes, made necessary by local conditions.

Deposits will be accepted only from individuals of the age of ten years or over, and no account will be opened in the name of any corporation, association, society, firm or partnership, or in the name of two or more persons jointly, nor will any account be opened in the name of one person in trust for or on behalf of another person or persons.

A depositor must be a patron of the Post Office at which he opens an account, and no person will be permitted to have two accounts at any one office, or one account at one office and a second account at another office.

When a person applies to open an account he will be required to furnish the Postmaster information as to whether he is a patron of the office, and he will also be required to fill out an application, on Form P. S. 300, on which will appear the signature and other information concerning the depositor. This form, which is in the shape of a heavy envelope, is retained by the Postmaster for his files. The reverse side of the envelope combines a simple ledger record of the depositor's deposits and withdrawals, and a receptacle in which the Postmaster files the duplicate of all certificates issued to the depositor.

A number will be given to each account when it is opened, beginning with No. 1 and continuing in order, and this number is entered on the envelope Form 300, and on all original and duplicate certificates issued in the name of the depositor to whom the account belongs. An account which has been closed and again opened, or a new account, will be given a new number.

Postal savings deposits will be evidenced by non-transferable and non-negotiable certificates, in fixed denominations of one, two, five, ten, twenty, fifty and one hundred dollars, each certificate bearing a serial number and containing spaces in which the issuing Postmaster will enter the name of the depository office, the date of issue, the number of the depositor's account, and the name of the depositor. Before delivery of the original, the depositor will be required to sign the duplicate certificate, which the Postmaster will retain and place in the depositor's envelope, Form P. S. 300.

A depositor, when opening an account, will be furnished a depositor's envelope, Form P. S. 301, in which he may preserve his certificates of deposit, and on which is printed, in addition to information for his guidance, a blank ledger record for keeping account of his deposits and withdrawals.

In the conduct of the system in the Canal Zone, no limit will be placed to the amount that any depositor may deposit in any one month, or to the total amount of his deposits.

A certificate of deposit, as stated above, is not transferable or negotiable and it is valid until paid.

In the issue of Postal savings certificates, the regulations adopted by the United States Postal Savings System provide that the Postmaster must issue the smallest practicable number of certificates on account of a single deposit, and this rule will be adopted in the Canal Zone as far as practicable.

An account by an intending depositor must be opened in person, but an exception will be made to this rule when it is shown to the Postmaster's satisfaction that a person, because of infirmity or for any other good reason, cannot appear personally to open his account. Where an account cannot be opened in person, the representative of the intending depositor will be advised by the Postmaster as to the necessary requirements in order to open such account.

A person who is already a depositor may make subsequent deposits through a representative or by mail, but in such cases the original certificates will not be forwarded to the depositor until he has first signed and returned the duplicate certificate or certificates, which the Postmaster will mail to him for his signature.

Lost or destroyed certificates will be replaced by duplicates, issued without cost, when the requirements for obtaining duplicates have been complied with. Postmasters will not be permitted to receive Postal savings certificates for safe keeping.

A depositor presenting a certificate for payment must endorse it in the presence of the Postmaster, and surrender it; if he signs by mark his signature must be witnessed by two disinterested witnesses. A depositor who withdraws only a part of the amount called for by any certificate will be paid such amount, and a new certificate for the remaining amount will be issued to him.

When it has been shown to the Postmaster's satisfaction that a depositor, because of infirmity or for other good reason, cannot appear in person to make withdrawal, he may authorize his representative to make such withdrawal by a written order, on a blank to be furnished for the purpose. When such a depositor desires to withdraw only a part of the amount called for by any certificate, he may authorize his representative to make such withdrawal by a written order similar to the one to be used in making full withdrawal.

In the case of the death of a depositor, payment of the amount of the account will be made to the legal representative of the deceased.

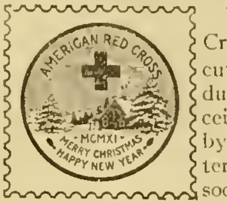
The amount of the reserve which Postmasters will keep on hand in connection with the issue and payment of Postal Savings certificates will be limited, and any person desiring to withdraw the amount of his certificates, when such certificates amount to several hundred dollars, should notify the Postmaster several days in advance, so that arrangements may be made by obtaining funds to meet the payment.

Where an employe of the Isthmian Canal Commission or Panama Railroad Company having an account at an office, is transferred to another station and desires to have his Postal savings account transferred to the office at which he is stationed, his account will be transferred upon his request.

Where an employe having a Postal Savings account returns to the States, it is proposed, should the depositor wish it, to issue him a check of the Treasurer of the Canal Zone on a Washington depository for the full amount of the depositor's account, or for any part of it, the remaining part to be paid in cash.

Deposits will be received at the following Post Offices: Ancon, Balboa, Bas Obispo, Corozal, Cristobal, Cristobal A (Porto Bello), Cristobal B (Toro Point), Culebra, Empire, Gatun, Gorgona, Las Cascadas, Matachin, Miraflores, Paraiso, Pedro Miguel.

Red Cross Seal.



Fifty thousand Red Cross seals, of which the cut herewith is a reproduction, have been received on the Isthmus by the Canal Zone Chapter. The National Association for the study and prevention of tuberculosis has authorized the Chairman of the Canal Zone Chapter sole agent for the sale of these stamps for the Canal Zone until March 1, 1912. The Christmas seals will be on sale at one cent each at the offices of the district quartermasters at all the stations in the Canal Zone, and at the Young Men's Christian Association clubhouses. The chairmen of local Red Cross Districts are requested to obtain their supply from these sources. In order to insure a large sale a woman's auxiliary will be organized by Mrs. C. A. Devol of Culebra and representatives will be appointed in each district for the purpose of interesting all the women in the Canal Zone in the enterprise. The National office in Washington hopes to sell 100,000,000. Over $300,000.00 was realized last year, from the sale of the Christmas seal.

Teachers and Clerks, Philippine Service.

Examinations have been announced by the Civil Service Commission, which it is expected to hold at Culebra on December 27 and 28, for assistant (male), teacher (male and female), and industrial teacher (male), in the Philippine Service. Applications must be forwarded to this office before December 5.

The entrance salaries for male and female appointees from the above examinations will probably be from $1,000 to $1,200 per annum.

A limited supply of the announcement of the above examinations has been received. Persons interested should request a copy of announcement No. 777, but an application blank should not be requested unless, after reading the announcement, intention is had to apply for one of the examinations. The announcement should be *immediately* returned to this office in order not to delay the dissemination of the information contained therein.

JOHN K. BAXTER,
Secretary, Isthmian Civil Service Board.

Missing Man.

Any one having information regarding the whereabouts of Robert Goodley, who left the service of the Isthmian Canal Commission in October, 1908, or of William B. McDonald, who is supposed to be on the Isthmus, is requested to communicate with the American Legation.

Obituary.

Joseph Turrell, an employe of the Pacific Division living at Ancon, committed suicide at his home on November 15. He was 37 years of age and had been on the Isthmus a little over five years; his home address was Helena, Montana. He is survived by his wife.

A passenger elevator will be installed in the Hotel Tivoli at Ancon. It is to be operated by electricity.

SOCIAL LIFE OF THE ZONE

Sunshine Society.

The organization of the Gatun Sunshine Society for the year 1911-1912 was effected on January 14, the membership at that time being 30. Mrs. H. A. Porter was the president. Since that time the society has forwarded $230 to the international headquarters in New York. The funds have been raised by members' dues, teas, sales held at various times, and an entertainment on October 31, the net proceeds of which were $100. The special interest of the organization has been devoted to the Arthur home for blind babies in Summit, N. J., where a dormitory for boys has been furnished and equipped, known as the Gatun dormitory.

The International Sunshine Society, of which the Gatun society is a branch, has for its purpose the caring for blind infants. Among its branches are institutions including a rest house in Brooklyn, a sanitarium, hospitals, and the Arthur home, which was opened last year. The work was organized in Gatun in 1908. This is the only branch on the Isthmus. It is also one of the largest organizations of women, having a membership of 50. Meetings of the society are held on the last Wednesday in each month. Dues are twenty-five cents a month.

Roman Catholic Bishopric and Missions.

The vacancy in the Roman Catholic bishopric of Panama caused by the death of Monseigneur Javier Junguito has been filled temporarily by the Vatican by the appointment of the Rev. Father William Rojas, formerly parish priest at Gorgona. The newly appointed apostolic administrator was born in Costa Rica and is a priest of the Order of St. Vincent de Paul. He came to the church of St. Cagetan, Gorgona, in 1908 from Colombia where for over twenty years he had been employed in the seminaries, the apostolic schools, and missions, and where he had also founded a mission of Indians. The Isthmian bishopric is the oldest on the continent of America; it was founded in Santa Maria la Antigua del Darien in 1513, removed with the Santa Maria colony to Old Panama in 1521, and finally after the destruction of Old Panama and the founding of the present city, was transferred to its present site in 1673.

The charge at Gorgona will be placed in the hands of the priests of St. Ferdinand's Church at Empire. Father Rojas intends to extend the parish of St. Ferdinand from Empire to San Pablo; the mission will then include many of the native villages in the interior. Three priests will be stationed at Empire for this work. In connection with this extension it is also purposed to open a parochial school in the parish house at Empire. Four sisters of the Order of St. Vincent will be brought from the States to take charge of the school. The parish house will be used for the sisters' house and a second house will be added to the church buildings for the accommodation of the priests. The parish school will be for white children.

Church Notes.

The meeting of the Ladies Auxiliary to the Empire Christian League on the last Friday in November will be omitted owing to the public meeting which will be held on the evening of that day. There will be an entertainment consisting of music and recitations. A thank offering will be asked to be used for mission work in the Canal Zone. The next meeting will take place in the chapel on Friday, December 1. The text books under discussion for the study of the coming year are "The Conservation of National Ideals," a work dealing with social and religious problems in the United States, and "The Light of the World," a study of comparative religions, by Robert E. Speers. In October nine new members were admitted to membership.

Under authority of the Southern Baptist Convention, the Baptist mission in the Canal Zone has leased a building lot in New Gatun for the purpose of erecting a church building. This will be a frame structure following the general type of the Canal Zone buildings, and will cost about $1,500. The mission will also construct a new church building in Colon to replace the one destroyed by fire in March. The site, on Bolivar Street, has already been granted, and the plans for the frame structure have been approved by the Commission. Work on the building will begin at once.

The Panama Mission of the Protestant Episcopal Church has sold the dwelling house erected for a rectory at Gatun about eighteen months ago to the Baptist Mission. The house, which is a modified type 17, will be used as a parsonage for the pastor in charge of the work at Gatun and Colon. This is the second house owned by the mission in the Canal Zone, the first having been constructed at Empire in 1909.

Services will be held in St. Mary's Episcopal Church, Empire, every Sunday evening at 7.45 o'clock. The Rev. Henry A. Brown will be the chaplain.

Revolver Championship.

In the revolver championship match held at Culebra on September 23, 24, 25, synchronously with the national matches in the United States the following scores were made, the figures in parentheses indicating the standings of the Canal Zone men in the national match, which have been certified by the United States Revolver Association:

Names.	Possible Scores.		
		A. 500	B. 500
L. D. Cornish	....	414 (34)	438 (19)
C. B. Larzelere	....	391 (51)	434 (31)
Jacob Bernson	....	386 (49)	430 (38)
M. W. Fox	....	394 (50)	426 (42)

Names.	Possible Scores.		
	C. 750	D. 250	F. 250
L. D. Cornish	541 (4)	198 (3)	167 (18)
C. B. Larzelere	504 (14)	169 (13)	161 (19)
Jacob Bernson	311 (22)	154 (19)	124 (28)
M. W. Fox	....	....	127 (27)
John Acors	353 (21)	....	....

Match A was for revolvers, 75 entrants, highest score 467; B, for pistols, 74 entrants, highest score 466; C and D for military revolvers, 5 shots in 15 seconds, entrants in C, 34, highest score, 665; entrants in D, 28, highest score, 208; F, pocket revolvers, 5 shots in 30 seconds, entrants, 30; highest score, 211.

In the National championship L. D. Cornish was awarded bronze medals for matches C and D. In the Canal Zone championship, gold, silver, and bronze medals were awarded to the first, second, and third contestants in each match.

Boy Scouts.

Each of the six companies of Boy Scouts in the Canal Zone has been granted a piece of land for the purpose of erecting a shack to be used as a clubhouse. The land is cleared and the shack built by the boys, under the direction of a scout master. The shacks are about ten by ten, roofed and roughly finished. The lumber for the purpose is given by the Commission. There is to be a reorganization of the scout commission, when the local commission will be merged in a central organization which, under the title of the Isthmian Scout Commission, will be granted a charter from the National headquarters in New York.

Uniform Rank, Knights of Pythias.

The first annual inspection and dance of Cristobal Company No. 1, Uniform Rank, Knights of Pythias, will be held at the clubhouse in Gatun on Wednesday evening, November 29. A special train leaving Paraiso between 7.00 and 7.30 on the night of November 29, returning at 12.30 a. m. on November 30, will be run for the accommodation of visitors. A general invitation is extended to members of the order and ladies.

University of Virginia Men.

Alumni and former students of the University of Virginia residing on the Isthmus are requested to send their names to Dr. W. McC. James, Ancon, who has been requested to forward them to the Registrar of the University and to the college newspaper.

At the annual bazar held by the Ladies Aid Society of the Methodist Episcopal Church on Friday, November 17, the receipts were $250.

OFFICIAL CIRCULARS.

Thanksgiving Day.

CULEBRA, C. Z., November 15, 1911.

CIRCULAR No. 419:

Thanksgiving Day, November 30, 1911, will be observed in the Canal Zone, and, as far as practicable, all public business will be suspended on that day.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Work Requests on P. R. R. for Individuals and Companies.

CULEBRA, C. Z., November 16, 1911.

CIRCULAR No. 417-A:

The General Superintendent of the Panama railroad is authorized to approve requests on Form C. E. 159 for the performance of work by the Panama Railroad Company for individuals and companies.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Second Class Passenger Rate on the P. R. R.

CULEBRA, C. Z., November 15, 1911.

CIRCULAR No. 420:

Effective December 1, 1911, the second-class passenger rate on the Panama Railroad will be reduced to two cents per mile, and the issuance of second-class half-rate requests and the sale of second-class half-rate tickets will be discontinued.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Pay Certificates.

EMPIRE, C. Z., Novembber 14, 1911.

ALL DEPARTMENTS:

The practice of requesting delivery of individual pay certificates in advance of delivery of the entire number covered by the roll in question, and in many cases before the pay roll has even reached this office, has grown to such an extent as to seriously interfere with the work of the office and to delay the working of the pay rolls.

In future all employes are requested not to ask for special delivery unless there is some very good reason therefor. Except in cases of an employe going on leave or terminating his service with the Commission no pay certificates will be delivered without written request from the Head of the Department to cover, stating the reason therefor.

Respectfully,
EDWARD J. WILLIAMS,
Disbursing Officer.

Approved:
GEO. W. GOETHALS,
Chairman and Chief Engineer.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 72 per cent completed, 162,260 cubic yards, out of a total of 225,000, having been placed at the close of work on November 18. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
November 13	49	3.00	1
November 14	28	2.00	1
November 15	100	5.30	1
November 16	124	6.00	1
November 17	168	7 00	1
November 18	124	6.00	1
Total	593	29.30	1
Previously reported	161,667		
Grand total	162,260		

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending November 18, follows:

DATE.	Hours worked.	Cubic Yards.
November 13	7.30	2,364
November 14	7.35	2,059
November 15	7.05	2,843
November 16	6.20	2,555
November 17	7.10	2,492
November 18	7.30	3,077
Total	43.10	15,390

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending November 18, follows:

DATE.	Hours worked.	Cubic Yards
November 13	5 00	2,094
November 14	4 15	1,852
November 15	3 45	1,772
November 16	4.30	2,119
November 17	3.50	1,702
November 18	3 48	1,484
Total	25.08	11,023

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending November 29, 1911. (75th meridian time):

DATE.	High.	Low.	High.	Low.	High.
	A.M.	A.M.	P.M.	P.M.	P.M.
November 23.	5.00	11.20	5.30	11 40	. .
November 24.	5 35	11 57	6 05		. .
			A.M.		
November 25.	. .	12 15	6 10	12.35	6 40
November 26.	. . .	12 55	6 45	1 12	7 20
November 27.	. . . . .	1 37	7 25	1 55	8 00
November 28.		2.27	8 10	2 45	8.55
November 29.		3 25	9.10	3 10	9 52

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, November 18, 1911. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Nov. 12	131 0	96 1	51.8	21 2	19 7
Mon., Nov. 13	130 2	95 6	49.5	20 6	19.6
Tues., Nov. 14	128.4	94 7	49.1	20 4	19.6
Wed., Nov. 15.	127.4	93 7	46.9	19 8	19 4
Thurs., Nov. 17	128.9	94 2	47.8	19 3	18 8
Fri., Nov. 17	134 1	98.2	49 0	19 2	18 4
Sat., Nov. 18	132 3	98.1	51.3	19 7	18 4
Height of low water	125 0	92.0	44.0		

Sale of Obsolete Metal Checks.

Office of Depot Quartermaster,
Mount Hope, C. Z., November 21, 1911.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, until two o'clock P. M., December 4, 1911, when they will be opened in the presence of attending bidders, for miscellaneous lot of, approximately, 47,000 old series metal checks. These may be seen on any working day between the hours of seven to eleven A. M., and one to five P. M., on application to this office. The right is reserved to reject any or all bids. Bids must be plainly marked "Proposal to purchase old metal checks, to be opened December 4 1911," and addressed to the Depot Quartermaster, Mount Hope, C. Z.

C. L. Parker,
Acting Depot Quartermaster

CONCRETE WORK IN THE LOCKS.

Over 71 per cent of the concrete for the locks is in place, the amount at the close of work on November 18, being 3,005,658 cubic yards, out of a total of approximately 4,199,400. A total of 26,169 cubic yards of concrete was laid in the locks during the week ending November 18.

GATUN LOCKS.

Over 84 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on November 18 being 1,706,219½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending November 18, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
November 13	1,178	32 30	6	340	3.40	2	38	1,591½
November 14	1,384	24.10	6	396	4 00	2	42	1,845
November 15	1,286	29 52	6	402	4.40	2	34	1,781
November 16	1,862	29.31	6	372	3.40	2	48	2,347½
November 17	1,316	23.26	6	454	4 20	2	16	1,865½
November 18	1,080	18.16	4	388	3.20	2	....	1,551
*Portable mixers	....	....	...	345½	....	.....	....	345½
Total	8,106	157.45	5.6	2,697½	23.40	2	178	10,981½
Previously reported	....	....	....	....	....	....	....	1,695,238
Grand total	....	....	....	....	....	....	....	1,706,219½

The 345½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days: November 13th, 35½; November 14th, 23; November 15th, 59; November 16th, 65½; November 17th, 79½; November 18th, 83.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 91 per cent completed, 769,000 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on November 18. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
November 13	542	12.50	3	226	18.75	4	....	768
November 14	518	12.50	3	261	17.00	4	....	779
November 15	444	12.00	3	300	24.00	4	....	744
November 16	524	14.50	3	296	24.00	4	....	820
November 17	656	17.50	3	311	27.00	4	....	967
November 18	376	10.50	3	300	18.75	4	....	676
Totals	3,060	79 50	3	1,694	129.50	4	....	4,754
Previously reported							4,423	764,246
Grand totals							4,423	769,000

MIRAFLORES LOCKS.

Over 38 per cent of the concrete for the system of two twin locks at Miraflores was in place on November 18, the total amount on that date being 530,439 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Nov. 13	1,076	28.00	5	718	12.00	2	338	25.00	4	. .	2,132
Nov. 14	686	21.33	5	750	10 40	2	300	23.00	3	....	1,736
Nov. 15	584	20 50	6	766	11 20	2	289	23.00	3	.....	1,639
Nov. 16	552	25.50	6	882	12 90	2	305	19.50	3	.. ..	1,739
Nov. 17	686	20 00	7	598	9.80	2	206	15.50	4	. . .	1,490
Nov. 18	791	27.00	7	612	8 10	2	295	22.00	3	......	1,698
Total	4,375	142 33	6	4,326	64 40	2	1,733	128 00	3 33	....	10,434
Previously reported										3,693	520,005
Grand total										3,693	530,439

Misdirected Letters.

Ancon, C. Z., November 22, 1911.

Briggs, F. M.
Caddle, James H.
Case, Adelbert
Clare, Frank
Clarke, J. E.
Cosselmon Louis
Foster, Captain J.
Gordon, Robert
Hipon, Ignacio
Holland, Miss Marie
Johnson, James S.
Lucey, William
Muratet, Francis
Ray, Mrs. Chas.
Seabold, Geo. E.
Soar, Chas.
Swab, Harry
Tabor, Mrs. J. C.
Webb, Arthur D.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The following is the schedule for moving picture shows for the week of November 27 to December 2: Monday, Empire; Tuesday, Cristobal; Wednesday, Gatun; Thursday, Gorgona; Friday, Corozal; Saturday, Culebra.

The standing of the teams in the Isthmian Basket Ball League on November 18, 1911:

Team.	Won.	Lost.	P. C.
Cristobal	6	0	1.000
Gatun	5	1	.833
Culebra	3	3	.500
Gorgona	3	3	.500
Empire	1	5	.167
Corozal	0	6	.000

Results of games November 11: Cristobal, 12, Gorgona, 10; November 13, Empire, 2, Corozal, 0 (forfeit); November 18, Gatun, 18, Gorgona, 15; Culebra, 21, Corozal, 15.

Games to be played November 25, 1911, Gatun at Cristobal, Corozal at Gorgona, Culebra at Empire

COROZAL.

Ten men have signed for the handicap pool tournament. Gold and silver medals will be given as prizes.

Arrangements have been made for an outdoor baseball game between teams representing the Cristobal and Corozal clubhouses. The game will be played at Corozal on Thanksgiving morning.

The Gorgona Minstrel Troupe will play at Corozal on Tuesday night, November 28.

CULEBRA.

A "stunt" class has been organized to meet on Monday evening from 8.00 to 10.00, to which all men are invited. The gymnastic work will consist of handball, wrestling, bar, Indian clubs, horse, and special work for individuals.

On Thanksgiving Day, Gatun will play Culebra at handball in the morning. Gorgona will play Culebra at volley ball in the afternoon, and an informal sociable will be held in the evening.

The high bowling scores for the week are as follows: Cushing, 224; Dougherty, 220; Hostetter, 215, 213.

EMPIRE.

The following high scores were bowled on the alleys during the past week: Ten pins—Snyder, 205; Pinney, 209, 213, 201, 223; Giavolli, 208; Parkis, 205. Duckpins—Rodeighiro, 101, 105; Pinney, 102, 111, 100, 105; Giavolli, 132.

The preliminaries in the billiard tournament have been played and the following is the standing: Class A, Messrs. Wood and Dryden; Class B, Messrs. Zinn and Potter; Class C, Messrs. Garrett and Decker. The finals will be played during the week of November 27

At the informal song service to be held on Sunday night November 26 there will be special music. All are invited to attend.

GORGONA.

Tickets for reserved seats for the first appearance of the Gorgona Minstrel Troupe at the clubhouse on November 27, will be on sale at the desk on November 22. New scenery, costumes and outfitting have been secured.

On Monday evening, November 13, the Gorgona Chess and Checker Club was organized, with W. I. Hodsden as president, and M. S. Fox, secretary. Messrs. Hershey, Hodsden and Hennen were appointed a committee on games and Messrs. Fox, Miller and Boster, on rules. Local and inter-association matches and tournaments will be arranged.

GATUN.

Spanish class No. 1 which meets at 7.30 o'clock Wednesday evenings is composed of Messrs. Moore, Fitter, Cosgrove, Mascomb, Mill, Harper, A., Harper, R., Connally, Duckworty, Perkins, Buschman, Turley, Johnson, S.sson, Lamot, Wilson, Huber, Mitchell, Atkins, Lore, Twitchell, Fitzpatrick, Parsons.

Spanish class No. 2 which meets at 8.30 includes Lueble, Sherburne, Worster, Langley, Dillon, Wilkie, McCollumn, Phillips, Lloyd, Madden, Jecko, Durgee, White.

The Gatun Y. M. C. A. Choral Club held its initial rehearsal on Monday evining November 20. Mr. Dickson of Culebra is in charge of the club.

Dr. J. J. McCormick will deliver a lecture on "Tuberculosis" on Thursday evening, November 23, at the clubhouse.

CRISTOBAL.

On Saturday night Gatun defeated the local team in two out of three games in duck pins with the following scores:

	Gatun.	Cristobal.
Total	457 440 448	432 477 430

During the week ending November 18, the following high scores were made on the local alleys: Duckpins—Louch, 103, 104, 102; Bullard, 106; Barrett, 106, 100, 102, 100, 104; Wheeler, 105, 103, 103, 116, 114, 102, 105; Smith, 101; Orr, E., 105, 102; Farrell, 101, 101; Marquez, 104; Cotton, E. 106; Teall, 105. Ten pins—Burns, T., 213, 217; Bullard, 201. Candle pins—Barte, 108.

Entries are now being received for the Thanksgiving Day Ten Pin Bowling Tournament in singles and doubles. Entries will close on the 28th.

A meeting of the representatives of various organizations was held on Tuesday evening, to make arrangements for a celebration of Christmas that will be of interest and pleasure to all the residents of Cristobal and the English speaking people of Colon. The following organization was effected: President, W. H. Kromer; secretary, E. C. McQuirk; treasurer, W. H. Marsh. The entertainment programme will be in charge of a committee from the Woman's Club, chairman, Mrs. Jas. Perkins. The committee on supplies is W. H. Kromer; decorations, Messrs Cousineau, DeLong, Putnam and Burrell, representing the Y. M. C. A.; A. V. Dayton, E. C. McQuirk, I. O. O. F., J. P. Mead; the Rev. C. H. Elliott, and Mrs. Morris representing the Church League.

The Topic Club on Christian Sociology will hold its next session on Monday, November 27, the subject, "Housing and Sanitation". Mr. Burrell will lead the discussion.

On November 29, the topic for debate at the Literary and Debating Club will be, "Resolved, that the awakening of the yellow race is inimical to the social, political and economic welfare of the white race."

On Thursday evening, W. F. Bernsee will give an exhibition of simultaneous checkers before the Checker Club. It is expected that at least 15 members will participate in this contest. The public is invited to attend.

On Friday, there will be a motion picture entertainment. This entertainment is an exchange of date with Empire.

COMMISSARY DEPARTMENT.

The commissaries are open during the following bours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

There have been no materjal changes in the cold storage price list since its publication three weeks ago.

Married.

CORNISH-VANDERGRIFT—At Cristobal on November 2, by Judge M. C. Rerdell, Duella Vandergrift of Covington, Ky., to Frank L. Cornish of Portsmouth, N. H. Canal Zone residence, Gatun.

JONES-MILLS—At Ancon on November 3, by Judge S. E. Blackburn, Mary G. Mills, daughter of Mr. and Mrs. W. A. Evans of Las Cascadas, to S. Jones of Nashville, N. C. Canal Zone residence, Ancon.

TRACY-BYNON—At Ancon on October 31, Florence Lydia Bynon of Lansford, Penn., to Norman Harding Tracy of Gatun, Canal Zone, the Rev. H. O. Purdy officiating. Canal Zone residence, Empire.

BEEMAN-LEONARD—On Wednesday, November 15 at the church of the Holy Redeemer, Culebra, by the Rev. Father Henry O. Collins, Verna M., daughter of Mr. and Mrs. Nicholas Leonard, to Mr. Donald H. Beeman. Canal Zone residence, Culebra.

Rainfall from November 1 to 18, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	Ins.		Ins.
Ancon	.90	12	3.37
Balboa	.80	7	2.21
*Miraflores	1.05	10	5.59
Pedro Miguel	.96	8	5.32
Rio Grande	2.67	11	11.16
Central Section—			
Culebra	2.28	11	10.30
*Camacho	2.22	4	9.79
Empire	2.78	11	8.17
Gamboa	2.28	11	7.60
*Juan Mina	1.41	4	6.91
Alhajuela	2.46	6	9.89
*El Vigia	1.58	4	7.74
*Gorgona	1.46	4	6.54
San Pablo	.97	5	7.57
Tabernilla	1.25	5	8.02
Bohio	2.80	4	14.11
*Monte Lirio	3.17	11	15.75
Atlantic Section—			
Gatun	3.79	6	13.93
*Brazos Brook	7.55	7	15.09
Colon	2.98	7	10.99
Porto Bello	1.71	7	†9.84

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5.00 p. m. November 17.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Panama	P. R. R.	Saturday	Nov. 18
Allianca	P. R. R.	Friday	Nov. 24
Colon	P. R. R.	Friday	Dec. 1
Advance	P. R. R.	Thursday	Dec. 7
Panama	P. R. R.	Thursday	Dec. 14
Allianca	P. R. R.	Wednesday	Dec. 20
Colon	P. R. R.	Wednesday	Dec. 27
Advance	P. R. R.	Tuesday	Jan. 2
Panama	P. R. R.	Tuesday	Jan. 9
Allianca	P. R. R.	Monday	Jan. 15
Colon	P. R. R.	Monday	Jan. 22
Advance	P. R. R.	Saturday	Jan. 27
Panama	P. R. R.	Saturday	Feb. 3
Allianca	P. R. R.	Friday	Feb. 9
Colon	P. R. R.	Friday	Feb. 16

CRISTOBAL TO NEW YORK.

Advance	P. R. R.	Friday	Nov. 24
Panama	P. R. R.	Friday	Dec. 1
Allianca	P. R. R.	Thursday	Dec. 7
Colon	P. R. R.	Wednesday	Dec. 13
Advance	P. R. R.	Wednesday	Dec. 20
Panama	P. R. R.	Wednesday	Dec. 27
Allianca	P. R. R.	Tuesday	Jan. 2
Colon	P. R. R.	Tuesday	Jan. 9
Advance	P. R. R.	Monday	Jan. 15
Panama	P. R. R.	Sunday	Jan. 21
Allianca	P. R. R.	Sunday	Jan. 28
Colon	P. R. R.	Saturday	Feb. 3
Advance	P. R. R.	Friday	Feb. 9
Panama	P. R. R.	Friday	Feb. 16
Allianca	P. R. R.	Thursday	Feb. 22
Colon	P. R. R.	Thursday	Feb. 29

NEW YORK TO COLON.

Almirante	U. F. C.	Thursday	Nov. 16
Prinz Joachim	H.-A.	Saturday	Nov. 18
Santa Marta	U. F. C.	Thursday	Nov. 23
Prinz Sigismund	H.-A.	Friday	Nov. 24
Oruba	R. M.	Saturday	Nov. 25
Metapan	U. F. C.	Thursday	Nov. 30
Prinz August Wilhelm	H.-A.	Saturday	Dec. 2
Zacapa	U. F. C.	Thursday	Dec. 7
Prinz Eitel Friedrich	H.-A.	Friday	Dec 8
Magdalena	R. M.	Saturday	Dec. 9
Almirante	U. F. C.	Thursday	Dec. 14
Prinz Joachim	H.-A.	Saturday	Dec. 16
Santa Marta	U. F. C.	Thursday	Dec. 21
Prinz Sigismund	H.-A.	Friday	Dec. 22
Clyde	R. M.	Saturday	Dec. 23
Metapan	U. F. C.	Thursday	Dec. 28
Prinz August Wilhelm	H.-A.	Saturday	Dec. 30

COLON TO NEW YORK.

Zacapa	U. F. C.	Thursday	Nov. 23
Prinz Eitel Friedrich	H.-A.	Saturday	Nov. 25
Magdalena	R. M.	Tuesday	Nov. 28
Almirante	U. F. C.	Thursday	Nov. 30
Prinz Joachim	H.-A.	Tuesday	Dec. 5
Santa Marta	U. F. C.	Thursday	Dec. 7
Prinz Sigismund	H.-A.	Saturday	Dec. 9
Clyde	R. M.	Tuesday	Dec. 12
Metapan	U. F. C.	Thursday	Dec. 14
Prinz August Wilhelm	H.-A.	Tuesday	Dec. 19
Zacapa	U. F. C.	Thursday	Dec. 21
Prinz Eitel Friedrich	H.-A.	Saturday	Dec. 23
Thames	R. M.	Tuesday	Dec. 26
Prinz Joachim	H.-A.	Tuesday	Jan. 2

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; ships for New Orleans in the coasting service on Thursdays at 4 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

The *Cristobal* will sail from Cristobal for New York at 2 p. m. on November 23. Among its passengers will be members of the House Committee on Appropriations.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Empire, C. Z., on Sunday, November 26, 1911, at 6 p. m.

The next concert will be given at Cristobal, December 3, 1911, at 4.30 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, NOVEMBER 29, 1911. No. 14.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Sinking Caissons at Miraflores Locks.

Twenty-two of the 250 concrete caissons on which will rest the upper guide wall at Miraflores Locks have been set in place, and 11 have been sunk to rock, 41 feet below the surface. Drawing up the buckets of mud excavated from the bottoms of the caissons is done at present by means of 7 star-drill engines, working separately, and by a "nigger head" driven by a hoisting engine taken from a dismantled 70-ton Bucyrus steamshovel. This is a horizontal application of the principle of the capstan, the rope from the pit being drawn around a differential windlass by the friction caused by pulling on the free end of the rope. It was designed to use 8 such units, rope-driven in series by the same engine, but delay in arrival from the States of the necessary sprockets and sheaves has prevented putting more than one of the units in operation.

Each of the series of pulleys is to be attached at a working platform designed to afford the maximum of safety to men within the caisson. The structure forms a protecting cover over the pit, leaving a slight aperture for the passage of the rope by which the bucket is raised and lowered. The rope passes over a pulley above the platform, which is made with a movable section, or tray, on rollers. When the bucket comes to the top, the tray is drawn aside to allow the bucket to pass through the platform. As soon as it has done this, the tray is shot back into place, closing the aperture and resting directly under the bucket, which is slacked down to rest on this movable part of the platform. Then the tray, bearing the bucket, is rolled to the edge of the platform and the bucket is dumped into a Decauville car. To return the bucket to the pit is the reverse of the operation described.

The platform arrangement has been found to result in more rapid excavation than the use of hoisting apparatus without a pit cover, and the inability to put the entire series of platforms in use at Miraflores is regarded as a handicap. The best record for one day made by the outfit now in use there, working on 8 caissons of 7 feet 6 inches at outside diameter, has been an aggregate sinking of 26 feet. The daily average is about 21 feet.

Three Million Yards of Concrete.

Over 3,000,000 cubic yards of concrete have been laid in the construction of the three sets of locks for the Canal. This is approximately three-quarters of the concrete required for this work, which is estimated at 4,199,400 cubic yards. The exact percentage, as well as the percentages of completion at each set of locks, is given elsewhere in this issue, under the heading, "Concrete Work in the Locks". The figures do not include the spillways. That at Miraflores has not been begun. With its concrete dam, it will require about 70,000 cubic yards.

At Gatun Locks, the center and side walls of the upper and middle locks are practically finished. In the work on the lower chambers, practically 66 per cent of the total amount of concrete is in place. No concrete has been laid for the lower approach or wing walls. Of the upper guide wall, 795 feet nearest the locks have been completed, leaving the remaining 705 feet about 24 per cent completed. The upper wing walls are approximately 95 per cent completed.

For the single lift of Pedro Miguel Locks, the portions of the walls which form the actual chamber are practically completed. Of the lower approach wall, 950 feet have been completed, leaving 250 feet on which nothing has been done. The wing walls, except the southwest, are practically untouched, and building the upper approach wall has just begun. Excavation for its foundation is finished, with the exception of the "mucking," or cleaning off the soil adhering to the rock. The wall will extend 1,185 feet from the upper guard gates. The guard gates afford a hypothetical demarcation of center and approach walls, which are in reality a continuous monolith.

At Miraflores, the center and side walls of the upper locks are about completed. No concrete has been laid for the upper approach or wing walls, and the laying of concrete for the lower chambers has just begun, with the placing of some foundation in the east chamber.

Steamshovel Borrow Pit at Gatun.

Steamshovel 134 has joined shovel 116 in the borrow pit in the hills at the west end of Gatun Dam, and it is expected that two more shovels will be brought from Mindi for this work about the first of January. About 2,000,000 cubic yards of dry fill can be excavated from this site at an elevation of not less than 80 feet above sealevel, and carried by easy grades to the surface of the dam.

The steamshovels, as well as the three 300-class American, and two 30-ton French locomotives which draw the dirt trains from the pit, and the two star-drills at work in the excavation, are supplied with water from a 10,000-gallon tank erected near the west end of the dam at an elevation of 154 feet above sealevel. The tank is fed by an 8-inch main which takes water from a small stream at elevation of 160 and less than 60 feet from the tank. This arrangement supplies daily about 50,000 gallons of clear water, which is piped from the tank to the shovels and drills, and to two standpipes for the locomotives.

Progress in Erecting Gates.

A new gate-erection outfit for the McClintic-Marshall Company, consisting of a locomotive crane and a double-span railway truss bridge to carry the crane, and cars, over both chambers of the locks, has arrived at Pedro Miguel Locks and will be in use within two weeks in the erection of the safety gates. About 1,800 of the 5,000 tons of material required for these gates (Nos. 62 to 65) have arrived at the locks and, as fast as the west backfill is brought up to grade, the structural iron is spread over its surface in classified piles, convenient of designation and access. Additional tracks will be laid as required.

At the upper guard gates at Pedro Miguel the skeleton work for the four leaves has been brought to nearly full height, 54 feet. On two of the leaves the sheathing is all placed, but not riveted. With the completion of heavy lifting for these gates, the erection bridge will be moved to the site of the upper lock gates, thence to the intermediate gates, while the new construction outfit is at work on the six gates at the lower end of the chambers.

At Gatun the skeletons for the upper lock gates in the west chamber have been reared over half way, and falsework frames have been attached to hold them erect. At Gatun and Pedro Miguel, together, 12 out of the total of 92 leaves are under construction. It is expected that the number will be 16 within three weeks and 20 by the middle of January. No gate work has been done at Miraflores, with the exception of setting the hinge bases in the walls.

Plan for Moving Chamber Crane.

The chamber crane in the east chamber of the upper flight of Miraflores Locks will have completed its work on the upper center wall by about the end of December and it is purposed then to remove it to the lower lock chamber. A plan has been devised by which the transfer can be made without dismantling the crane, as was necessary to bring it to Miraflores Locks from Pedro Miguel, where it had been used before the Miraflores Locks were begun. The plan has been approved but its execution is contingent upon procuring timbers of requisite size already on the Zone, as too much time would be lost in ordering them from the States.

The crane is mounted on trucks running on tracks 60 feet from center to center. It is purposed to extend the tracks, which now

NOTES OF PROGRESS.

(Continued.)

rest on the floor of the upper chamber, over the pit of the lower chamber on heavy trestle work. Cribs, erected on the familiar principle of the log cabin, of 12 by 12 timbers, will be built up from the bottom of the pit. A set of jacks, resting on the top layer of timbers, will be placed under the corners of the trucks of the crane, the wheels will be removed and the jacks will be lowered till the trucks rest on a supplementary lot of jacks, set on the next lower stratum of timbers. The two top timbers will then be removed, affording access to the third stratum, on which the first set of jacks will be placed, and the process of stepping down will be continued.

The crane is to be lowered a distance of approximately 27½ feet, the difference in elevation between upper and lower chambers. It weighs 200 tons and its top is 110 feet above the rails on which rest its four trucks with 12 wheels each. Steel cables will be used to steady the structure during the moving. It is estimated that the work can be done within 10 to 15 days. To dismantle, transfer and rebuild would require not less than 6 weeks.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 72 per cent completed, 163,031 cubic yards, out of a total of 225,000, having been placed at the close of work on November 25. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
November 20	127	6.30	1
November 21	152	7.30	1
November 22	176	7.30	1
November 23	180	8.00	1
November 24	108	4.30	1
November 25	28	1.30	1
Total	771	35.30	1
Previously reported	162,260		
Grand total	163,031		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending November 25, follows:

DATE.	Hours worked.	Cubic Yards.
November 20	4.20	1,798
November 21	4.15	1,758
November 22	4.10	1,947
November 23	4.38	2,044
November 24	4.05	1,801
November 25	3.25	1,076
Total	24.53	11,054

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending November 25, follows:

DATE.	Hours worked.	Cubic Yards.
November 20	7.20	2,514
November 21	7.05	3,072
November 22	6.40	2,715
November 23	6.05	2,612
November 24	6.00	2,008
November 25	6.50	2,557
Total	40.00	15,478

New Railway Station in Panama.

Plans are in preparation for a new passenger station in the city of Panama, to occupy the site of the present structure. The plans are not complete but the layout has so far been determined that work has been started on the new yard tracks, and two concrete alighting platforms are under construction. These platforms will be provided with umbrella covers, to afford protection from rain to those entering or leaving the trains, and for the present temporary protection will be provided from these sheds to the exit gates.

The permanent station building will occupy a position near the yards and a little east of the present building. It will provide more room and better layout for exits and cab stands. The work of tearing down the old station hotel building at the north end of the present station will be begun shortly.

CONCRETE WORK IN THE LOCKS.

Over 72 per cent of the concrete for the locks is in place, the amount at the close of work on November 25, being 3,031,082½ cubic yards, out of a total of approximately 4,199,400. A total of 25,424 cubic yards of concrete was laid in the locks during the week ending November 25.

GATUN LOCKS.

Over 85 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on November 25 being 1,717,778½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending November 25, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
November 20	1,412	22.22	6	490	3.40	2	0	1,949½
November 21	1,422	23.00	6	544	5.40	2	0	2,026½
November 22	1,618	25.26	6	376	3.40	2	0	2,049½
November 23	1,296	21.10	6	322	4.20	2	12	1,695
November 24	1,356	22.54	6	410	4.40	2	12	1,824½
November 25	1,554	25.16	6	404	4.40	2	16	2,014
*Portable mixers	....	....	......	315	....	......	....	
Total	8,658	140.18	6	2,861	26.40	2	40	11,559
Previously reported	....	....	......	....	....	......	....	1,706,219½
Grand total	....	....	......	....	....	......	....	1,717,778½

The 315 yards shown for the portable mixers are reinforced concrete, and were placed on the following days; November 20th, 47½; November 21st, 60½; November 22nd, 55½; November 23rd, 65; November 24th, 46½; November 25th, 40.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 92 per cent completed, 773,695 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on November 25. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
November 20	470	14.00	3	271	16.75	4	....	741
November 21	456	13.00	3	108	6.75	1	....	564
November 22	424	13.00	3	220	17.50	3	....	644
November 23	640	17.00	3	234	17.00	4	....	874
November 24	612	16.50	3	278	20.00	3	....	890
November 25	860	19.50	3	122	10.50	3	....	982
Totals	3,462	93.00	3	1,233	88.50	3	....	4,695
Previously reported	....	....	......	....	....	......	4,423	769,000
Grand totals	....	....	......	....	....	......	4,423	773,695

MIRAFLORES LOCKS.

Over 39 per cent of the concrete for the system of two twin locks at Miraflores was in place on November 25, the total amount on that date being 539,609 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Nov. 20	1,218	31.00	7	442	6.50	2	278	26.50	4	....	1,938
Nov. 21	940	25.00	6	478	6.80	1	232	19.00	3	....	1,650
Nov. 22	1,036	36.00	6	468	6.70	2	96	4.00	1	....	1,600
Nov. 23	782	30.00	7	536	8.60	2	195	15.50	2	....	1,513
Nov. 24	382	16.75	7	180	3.10	2	273	22.50	3	....	835
Nov. 25	1,086	37.00	7	386	3.20	1	162	14.00	2	....	1,634
Total	5,444	175.75	6 83	2,490	34 90	1 67	1,236	101.50	2.5	....	9,170
Previously reported	.....	....	....	....	....	.....	....	....	......	3,693	530,439
Grand total	....	....	....	....	....	.....	....	....	......	3,693	539,609

GRAVING DOCK.

Plans for the Dry Dock at Pacific Entrance.

Plans for the completed Canal include a graving or dry dock in which repairs may be made to Government and other ships. The location of this dock has been fixed at Balboa. The design of the dock, and other facilities in which the Navy Department is particularly interested, has been placed under the immediate charge of Commissioner H. H. Rousseau, Civil Engineer, U. S. N., and he has made his recommendations covering the general characteristics of the dock. These recommendations have been referred to the Navy Department for an opinion as to whether the proposed cross section is satisfactory, and in order that it may submit a plan showing the number and arrangement of keel, bilge-keel, and bilge blocks with which it desires to have the dock equipped. The recommendations are as follows:

LOCATION.

To be at the Pacific terminus of the Canal in accordance with the preference which has been expressed by the Navy Department. The best site available is on the flat northwest of Balboa Hill where the excavation, as determined by borings, will be in hard rock. This has been more fully covered by the report of the Board of Terminals which will reach you within a day or two.

ARRANGEMENT.

The dry dock will point northeast and southwest. The repair shops will be placed alongside of it. The dock will be entered from an approach slip not less than 400 feet wide and 1,000 feet long.

DIMENSIONS.

The dimensions proposed are similar to the Canal locks, *i. e.*, a clear width at entrance of not less than 110 feet; a length sufficient to dock and repair vessels a thousand feet overall; and a depth over four-foot keel blocks of 35 feet as compared with mean sealevel. In order to obtain advantage of the full depth of the dock in emergency at very little increased cost a depth of 39 feet over the sill as compared with mean-sea-level is proposed. This will give a depth of 41.5 feet over the keel-blocks at mean high-water, and a depth of 46.2 feet over the keel-blocks at extreme high-water. The depth at mean low-water over the keel-blocks will be 29.3 feet.

ENTRANCE GATES.

The Canal locks are provided with steel miter gates, and, in addition, two floating steel caissons of the ordinary ship type will be provided with grooves at the head and foot of the locks to enable the lock chamber between the caisson groove and the upper or the lower miter gates to be unwatered. These conditions, together with the rather considerable range in tide, fix as the most satisfactory and economical method of closing the dry dock entrance, miter gates of design similar to the miter gates of the Canal locks. Outside of the dock miter gates there will be a sill for seating one of the Canal lock floating caissons when required either to examine and repair the dock gates or in case of emergency should the dock gates be inoperative. The dock gates will be operated electrically. The time of opening and closing will be about two minutes.

BODY OF DRY DOCK.

The floor of the dock will have a width of 100 feet, with side-altars that will permit the docking and convenient repair of the largest vessel that can be put through the entrance. Owing to the character of the material on which the dock will be founded, it is expected that the floor and sides will consist of a comparatively thin lining of dense concrete anchored to the underlying rock. It is considered especially desirable to limit the width of the dock at coping level to 140 feet. This is 21 feet greater than the width at coping level of England's latest graving docks, two of which are now under construction at the Admiralty Dockyard at Portsmouth, England, at a cost of about three million dollars each, and which I visited and inspected about two months ago. These graving docks have an entrance width of 110 feet and a length of about 831 feet. The additional 21 feet in width, which is proposed for the Balboa graving dock, is largely on account of the practice and assumed preference of the United States Navy in matters of this kind; and if the Navy Department is willing and feels able to approve a lesser number of side-altars or a slight reduction in width of the individual altars, it will enable the cost of the Balboa graving dock to be appreciably lessened. It is proposed that the body of the dock shall be furnished with the usual conveniences and accessories in the way of a sufficient number of slides and stairways giving access to the different altars, and that the floor drainage shall be adequately provided for, including two large longitudinal culverts running the full length of the dock under each side gutter, to assist in the rapid unwatering of the dock as the water level falls below the top of the blocks. The head of the dock will be curved, approaching a semicircle. It is proposed that the blocking system and fittings shall be similar to those which have been adopted as standard by the United States Navy. It is recommended that the dock be not fitted with intermediate gates, as such construction will add largely to the cost, and tend possibly to interfere with the repair of vessels approaching the maximum length of the dock, and because it is not believed that the convenience in carrying on the repair of ships and the saving in cost of pumping would at all justify or necessitate intermediate gates.

OTHER ACCESSORIES.

Along each side of the dock will be tracks for a 40-ton locomotive crane having reach to the center of the dock, and also standard gauge track for lighter cranes of as long reach as practicable. The dock will be provided with the usual capstans, electric-driven, at the head and at the entrance of the dock; also with bollards of standard size and spacing.

PUMPING PLANT.

The pumping plant will be located opposite the entrance of the dock and will consist of not less than three vertical, centrifugal pumps of large size, and two small drainage pumps. As it is expected electric current will be generated by the hydroelectric plant at Gatun, the cost of power will be extremely small. A culvert of large size will be built around the dock under the crane tracks to carry conduits for water, air, electricity, steam, etc., as required.

GENERAL.

The dock will conform in all respects to the requirements of Naval vessels, commercial vessels of all kinds, and vessels of the Panama Canal.

Sale of Obsolete Metal Checks.

OFFICE OF DEPOT QUARTERMASTER,
MOUNT HOPE, C. Z., November 21, 1911.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, until two o'clock P. M., December 4, 1911, when they will be opened in the presence of attending bidders, for miscellaneous lot of, approximately, 47,000 old series metal checks. These may be seen on any working day between the hours of seven to eleven A. M., and one to five P. M., on application to this office. The right is reserved to reject any or all bids. Bids must be plainly marked "Proposal to purchase old metal checks, to be opened December 4, 1911," and addressed to the Depot Quartermaster, Mount Hope, C. Z.

C. L. PARKER,
Acting Depot Quartermaster.

The following vessels arrived at, or departed from, the port of Balboa during the week ending November 25:

Arrivals—November 20, *Ucayali*, from Callao; November 21, *Chile*, from Guayaquil; November 22, *Huasco*, from Valparaiso; November 23, *Cuzco*, from San Francisco; November 24, *Pennsylvania*, from San Francisco; November 24, *Oberon*, from Port Harford.

Departures—November 19, *Peru*, to San Francisco; November 20, *Leelanaw*, to San Francisco; November 20, *Guatemala*, to Callao; November 23, *City of Panama*, to San Francisco.

LABOR FORCE AND QUARTERS IN OCTOBER.

The total force at work on the Canal and railroad on October 25, was 37,269, as compared with 37,315 at the end of September, 1911; with 35,334 in October, 1910, and 35,405 in October, 1909. Canal employes numbered 29,541 and railroad employes 7,728. The number of "gold" or white American employes in the Canal force, was 4,229, compared with 4,112 in September, 1911, and with 4,596 in October, 1910. The force report for October 25, follows:

DEPARTMENT.	SILVER EMPLOYES.*													Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Coust'ct'n and Eng'r'ng.	4,246	13	15	242	678	2,778	4,283	440	106	472	4,205	2,931	249	20,658	3,147	23,805
Civil Administration....	183	..	..	2	4	25	......	......	...	.....	......	19	....	233	352	585
Sanitation........	744	..	..	3	3	4	1	3	...	.....	7	383	†7	1,156	362	1,518
Quartermaster's.........	924	..	1	116	152	116	141	3	21	.....	186	940	††9	2,616	203	2,819
Subsistence.............	634	..	..	2	.....	1	......	......	...	.....	......	......	....	637	51	688
Disbursements...........	7	..	..	....	.....	......	......	......	...	.....	......	......	....	7	25	32
Examinat'n of Accounts.	5	..	..	....	.....	......	......	......	...	.....	......	......	....	5	89	94
Total................	6,743	13	16	365	837	2,924	4,425	446	127	472	4,398	4,273	265	25,312	4,229	29,541
Month previous.........	6,748	14	19	350	818	2,847	4,575	42	119	500	4,494	4,700	276	25.511	4,112	29,623

Panama railroad force, 4,111; Panama railroad relocation force, 2,454; Panama railroad commissary force, 1,163 Total, 7,728. I. C. C. force, 29,541. Grand total, 37,269.

*All wages specified are in gold.

†Includes 1 at 5 cents.

††Includes 7 at 5 cents.

The employes in the Department of Construction and Engineering on October 25, were distributed, as follows:

DIVISION.	SILVER EMPLOYES.*													Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Chief Engineer	46	.	..	7	11	14	....	......	...	11	79	27	1	196	174	370
Mechanical..............	239	5	2	31	44	439	65	......	...	.....	754	23	9	1,611	673	2,284
Atlantic........	1,851	6	11	99	319	1,031	1,419	333	...	27	874	496	37	6.503	850	7,353
Central.................	1,039	2	..	31	113	490	1,963	14	88	434	973	2,165	148	7,460	789	8,249
Pacific.................	1,071	..	2	74	191	804	836	93	18	...	1,525	220	54	4,888	661	5.549
Total	4,246	13	15	242	678	2,778	4,283	440	106	472	4,205	2,931	249	20 658	3,147	23,805
Month previous.........	4,351	14	18	227	668	2 707	4,345	40	103	498	4,355	3,355	263	20,944	3,082	24,026

*All wages specified are in gold.

QUARTERS.

On November 1, there were 24,747 occupants of Commission quarters. Of these, 9,114 were white Americans, of whom 5,115 were men, 2,060 were women, and 1,939 were children. There were 5,972 Europeans of the laborer class, of whom 5,308 were men, 278 women, and 386 children. There were 9,661 West Indian negroes, of whom 7,352 were men, 1,033 women, and 1,276 children. Included in the above were 42 Asiatics, 138 East Indians and 108 Panamans.

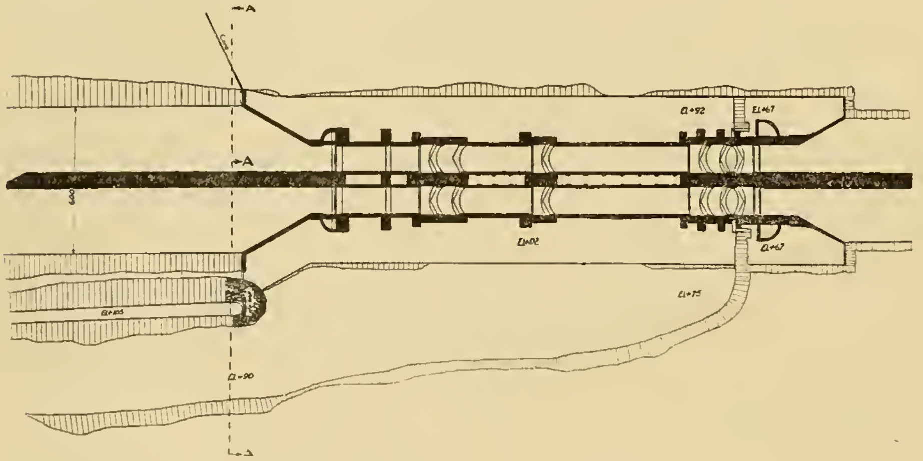
PEDRO MIGUEL DAM.

Formation of Barrier at Southern End of Gatun Lake.

The construction of the Pedro Miguel Dam, which is the southern, or Pacific, counterpart of Gatun Dam in impounding the waters of Gatun Lake, will be pushed with the beginning of the dry season. The dam will not be subjected to water pressure till after the flooding of Culebra Cut, which is protected by a dike at Bas Obispo, at its northern end. The dam is now about 50 per cent completed.

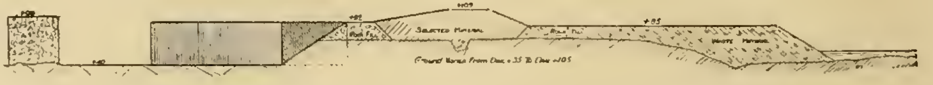
The site of Pedro Miguel Dam and Locks is at the southern end of Culebra Cut, where the Rio Grande, flowing from the continental divide to the Pacific, passes between a large hill on the west, which rises to the height of 525 feet, and one 250 feet high on the east. The width of the gap, across which the dam and locks are being constructed, is about 1,200 feet between the bases of the hills and about 2,000 feet at 92 feet above sealevel, which is the elevation of the upper lock walls. The average depth of excavation for the Canal prism through the gap is about 23 feet, that is, from the natural surface to 37 feet above sealevel, the elevation of the bottom of the upper lock chamber. The waters of the stream are carried off through the drainage culvert of the center wall, entering it at present through the intake just above the upper guard gate, on the east side.

The plan of the dam and of its connection with the locks is shown in the accompanying sketch (*A*). The dam connects the west hill, near Station 1917, with the upper west wing wall of the locks and is 1,400 feet long. It is to be 40 feet across the top, which is 105 feet above sealevel or 20 feet above the normal lake level. The side slopes are to be 8:1, so that the minimum width of base is about 800 feet. The dam will be subjected to a maximum head of water of 40 feet, though the average head will be 25 to 30 feet.



(*A*). PEDRO MIGUEL LOCKS AND EAST END OF DAM.

From the upper end of the west lock wall proper will extend a concrete wing wall, flaring at an angle of 30 degrees with the axis of the locks for a distance of 320 feet (till the Canal channel is 600 feet wide), and then running perpendicularly to the axis for about 80 feet. The top of the wall will be 92 feet above sealevel, or 55 feet above the bottom of the approach. The 320 feet of wall extending at 30 degrees with the axis is on a base 28 feet wide (elevation +37) including a toe on the front, on a batter of 1 in 3 to a point 15 feet above the base. At this point and for 4 feet above it the thickness of the wall is 23 feet, and the face is vertical to the top. On the back side, the wall at intervals of 6 feet, vertically, is stepped inward so that it is 10 feet wide on top. The portion of the wall which lies perpendicular to the axis of the Canal is to be built in two sections, a return wall, and a core wall. The first part will be vertical on the downstream, or south side. The top (elevation +92) will be 5 feet wide and the back will batter 3 on 1, the width of the base thus being determined by the variations in elevation of the rock on which it rests. The base of the core wall will be similarly determined by a batter of 6 on 1 from a width of 4 feet at elevation 92; but in this portion the face toward the north will be vertical and the batter will be on the lower side. The exact length of the sections perpendicular to the axis will be determined by the conditions developed by the excavation, but the return wall will be approximately 80 feet long, and the core wall approximately 70 feet. The west wing wall will contain 15,600 cubic yards of concrete, of which 670 yards had been placed on November 1.



(*B*). CROSS SECTION OF PEDRO MIGUEL DAM, FROM CENTER WALL OF LOCKS.

The east end of the dam is to be built up on both sides of this cut-off wall, which thus forms a concrete core for this end of the dam. The fill of dirt and rock will contain about 730,000 cubic yards, of which 370,000 cubic yards have been placed to date. About 30,600 cubic yards of rather porous soil are to be excavated at the junction of the dam with the hill at the west end, the space to be filled in with selected material, principally impervious clay. In the construction of the body of the dam, two ridges of rock are formed, between which is placed selected material to form a core 140 feet wide at the bottom. The material is puddled and rolled. The dam rests on practically impervious swamp soil of clay and sand, varying in depth from 10 to 30 feet above a stratum of argillaceous sandstone. The surface of the dam on the Gatun Lake side is to be riprapped with selected rock. The lower side will be inundated to the elevation of 55 feet above sealevel by the waters of Miraflores Lake, impounded by Miraflores Dam and Locks, about 2 miles south. A cross section of the dam, at its juncture with the locks, is shown in sketch (*B*).

On the east side of Pedro Miguel Locks, which lie close to the hill, a wing wall similar to the one on the west side, together with a similar core wall 260 feet long, will connect the locks directly with the hill. They will contain about 14,600 cubic yards of concrete, none of which has been laid. Resting on rock, and extending some distance into the hill, they will be almost perfectly watertight.

Lock Materials.

A requisition has been made, and advertisements will soon be published for bids, for miscellaneous material for the rock railways and miter gates of the locks, track bonds, flexible and solid conduit, junction boxes and conduit fittings, steel splice bars, brass pins, and sheet asbestos. Advertisement will also be made presently for 92 cover seats for the crank gear recesses in the lock walls.

Obsolete and Surplus Supplies.

The facilities for storing at Mount Hope obsolete and surplus equipment in charge of various departments have been augmented by the erection of a new storehouse, 50 by 150 feet in plan and 16 feet to the eaves. The roof and sides are of corrugated sheeting. A floor of secondhand steel plates is being laid. The amount of equipment turned in to the Depot Quartermaster has filled the storehouse originally designated for this purpose and additional space is required for storing and for exhibiting to intending purchasers. It is purposed later, when the total value would warrant it, to catalogue the goods, which represent nearly all phases of the Canal construction and of life on the Zone, and distribute these lists for information of intending bidders.

Pilots, Masters, Mates, Engineers, Chauffeurs.

Examinations for pilots, masters, mates, and engineers, and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on December 6, 1911. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m. on December 6, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

Canal Zone Rifle Club.

The annual individual member's match, for the National Rifle Association gold medal, will be held on the Gamboa range on December 3. Members participating will fire ten shots at 200, 300, and 500 yards, and will be allowed two sighting shots. The medal will be awarded to the person making the highest total.

CONCRETE ARCHES AT LOCKS.

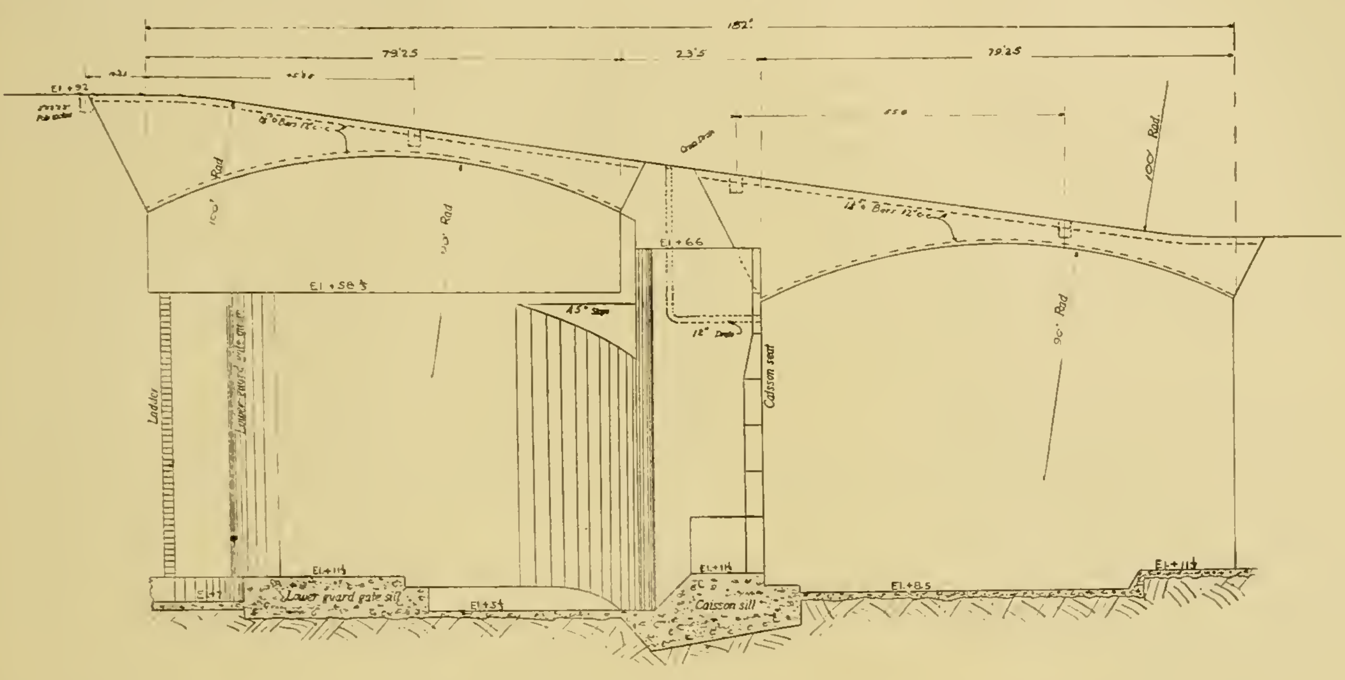
Graceful Structures Connecting Walls at Lower End.

No part of the lock construction at Pedro Miguel attracts more attention than the arches at the south end of the chambers, which connect the walls of the locks proper with the guide and flare walls of the approach. They are light and graceful in appearance and form an agreeable contrast to the plain massive walls of the lock chambers. At present this arch construction can be seen only at Pedro Miguel, but it will also be used in the lower approaches of the locks at Gatun and Miraflores, in the same relative location. In the accompanying sketch the nature of the work is indicated.

In each flight of locks the purpose of the arches is the same, namely to save concrete while making a bridge over which the electric towing mules will pass in towing a ship through the locks. Incidentally much is added to the beauty of the lock construction. There are two arches in each of the side walls and one in the center wall, making five for each flight of locks, fifteen in all.

At Pedro Miguel the side wall arches make a continuous bridge from the main lock walls at elevation 92 feet above sealevel to the wing walls at elevation 67 feet. The upper arch contains about 1,093 cubic yards of concrete and the lower, about 1,021 cubic yards; while the arch in the center wall contains about 1,850 cubic yards. Each side wall arch contains about 27,676 pounds of reinforcing steel, or 30 bars 1¼-inch square, 82 feet long, and 30 bars 1¼-inch square and 92 feet long, while the center wall arch contains about 47,100 pounds of iron.

The width of the arches in the side wall is 31½ feet, and center wall 54 feet; length of span of each arch, 79¼ feet; minimum thickness of crown, 5 feet; radius of intrados, 90 feet; rise of arch, 9 feet 2 inches.



SIDE WALL ARCHES, PEDRO MIGUEL LOCKS.

SOCIAL LIFE OF THE ZONE.

Woman's Guild of St. Luke's Church.

At the meeting of the Woman's Altar Guild of St. Luke's Church, Ancon, held at the home of Mrs. W. C. Gorgas on Tuesday afternoon, November 21, it was decided to hold the semimonthly meetings during the year, on the first Tuesday in each month at the Hotel Tivoli at 9.30 a. m.; on the second Tuesday at the home of a member at 3.30 p. m. As the guest of the guild for the afternoon, Mrs. C. A. Devol interested the members in the sale of the Red Cross Christmas seals. The receipts from the sale of these seals are devoted to the anti-tuberculosis work that is being carried on extensively in the United States. The guild purchased 1,000 seals and appointed Mrs. Charles W. Barber chairman of the sale for the organization. Those wishing to purchase them may be accommodated by applying to Mrs. Barber. The seals sell for one cent each. The postal authorities have given permission for the use of the seal on all packages and letters and post cards, provided that it is placed on the reverse side of the envelope or package, from that on which the government stamp is placed. The next meeting of the woman's guild will be held at the Hotel Tivoli on December 5, at 9.30 a. m.

Church Notes.

The Chapter of the Brotherhood of Saint Andrew, in connection with St. Stephen's Protestant Episcopal Church in New Gatun, has completed the required probationary period of three and one-half months and has been granted a charter. There are 40 members in the new chapter. St. Andrew's Day, November 30, will be observed by the Chapter with appropriate services in the church in the morning, followed by a banquet.

The Union Church and Sunday school at Las Cascadas held a "sociable" at the Commission chapel on Tuesday evening, November 14, for the benefit of the Christmas fund. There was a program, in which the children of the Sunday school took part, and ice cream and cakes were sold. The entertainment netted about $30.

Dr. B. D. Grey, Corresponding Secretary of the Home Mission Board of the Southern Baptist Convention, will arrive at Colon on November 30. He will hold services at Colon at 11 o'clock a. m. Sunday, December 3, and at Empire on the same day at 7.30 p. m. The public is invited to these meetings, especially those who are interested in Baptist work.

Thanksgiving Services.

The annual harvest festival thanksgiving service was held in Christ Church, Colon, on November 19. At the conclusion of the service a part of the fruits, breads and vegetables which had been placed within the chancel, were dispensed among the poor of the congregation; the remainder were sold, the amount received being placed as a thank offering in the church treasury. The Woman's Guild presented an offering of $100 as the result of the recent entertainment and other efforts. On Thanksgiving day there will be a service in the church at 9 a. m. There will be the usual short service in St. Luke's Church, Ancon, on Thanksgiving day at 9 a. m.

A Thanksgiving service was held in the Methodist Episcopal church, Panama, on Sunday, November 26. The Rev. Harry Compton was the preacher. On the same day Thanksgiving was celebrated in the Union Church, Cristobal, the Rev. Carl H. Elliott being the preacher.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, November 25, 1911. All heights are in feet above mean sea level.

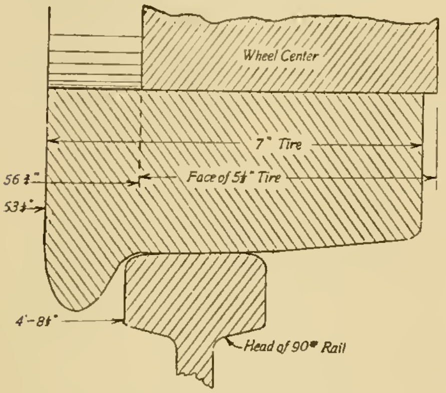
DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Nov. 19..	129.4	95.6	50.4	19.4	18.4
Mon., Nov. 20.	128.2	94.1	47.3	18.7	18.2
Tues., Nov. 21.	133.1	97.4	50.2	18.3	17.9
Wed., Nov. 22.	131.8	96.3	59.6	19.0	18.0
Thurs., Nov. 23	133.4	98.0	51.8	20.1	18.6
Fri., Nov. 24...	128.9	94.7	49.4	19.1	18.5
Sat., Nov. 25..	128.0	94.1	49.0	19.8	18.6
Height of low water......	125.0	92.0	44.0		

CONVERSION OF ROLLING STOCK.

Work Necessary for Changing from 5 Foot to Standard Gage.

An estimate has been made of the cost of converting the rolling stock now in use on the Canal construction from the present five foot gage of the Panama railroad to the standard 4 foot $8\frac{1}{2}$-inch gage of railways in the United States.

When the Panama railroad was built in the early fifties, railways were in their infancy and no standard gage was adopted until many years later. The Panama line held to its gage, and the French were obliged to adopt it for their rolling stock when they began to dig the canal, in order that their locomotives and cars could run over the main line of the railroad. When the Americans began work in 1904 they found all the old French track laid for the five foot gage and all the equipment available made for that width. Therefore the new rolling stock of all kinds was constructed to the five foot gage. This equipment, including locomotives, spoil cars of various types, locomotive cranes, spreaders, and other rolling stock, cannot be used in the United States, until the gage is changed, and with the view to selling it to advantage when the canal work is completed, the investigation with regard to change of gage has been made. The estimate for various kinds of equipment follows:



CHANGE OF TIRES TO CONVERT LOCOMOTIVE TO STANDARD GAGE.

CLASS 1.

Forty-ton flat cars, American Car & Foundry Company; 50-ton steel flat cars, Standard Steel Company; 40-ton box cars, American Car & Foundry Company; 60-ton box cars, American Car & Foundry Company; All steam shovels—The trucks of this class were so designed as to be readily convertible to standard gage. The wheel fits on the axles are turned for a length of 9 inches, and a collar 1-11/16 inches wide has been pressed on ahead of the wheel. The brake beams are punched for both gages. The work required will be as follows:

Remove wheels and collars from axles; press wheel to 4 foot $8\frac{1}{2}$-inch gage; press on collars; remove brake shoe heads; rivet on brake shoe heads; make brake hangers; assemble. Cost per car will be $27.20.

CLASS 2.

About 50 per cent of this equipment is without collars. These collars have been broken in service or by mounting new wheels on the axles. They comprise Class 2.

The operations will be:

Force wheels to gage; cast and finish $1\frac{3}{4}$-inch collars; mount collars; remove brake shoe heads; punch holes in brake beam; rivet brake shoe head on brake beam; make new brake shoe hangers; assemble. The cost per car will be $28.50.

CLASS 3.

Twelve-yard Western Steel Dumps; 25-yard Western Steel Dumps—This class of equipment has split axle collars instead of the solid ones. The collars are made up in two parts bolted together. The work required on this equipment is as follows:

Remove collars; press wheels to 4 foot $8\frac{1}{2}$-inch gage; replace collars; remove brake shoe heads; rivet on brake shoe heads; make new brake hangers; assemble. The cost per car will be $26.00.

CLASS 4.

All remaining equipment mounted on Master Car Builders trucks belongs to this class. The following work will be required:

Remove wheels; turn wheel fit on axle; mount wheels; cast and finish $1\frac{3}{4}$-inch collars; mount collars; remove brake shoe head; punch new holes; make new brake hangers; assemble. The cost per car will be $31.00.

CLASS 5.

Locomotives, 101 class; 201 class; 301 class; 601 class.—These classes of locomotives can be brought to standard gage by shrinking on 7-inch tires in place of the $5\frac{1}{2}$-inch as shown on accompanying sketch. The brake beam hangers and brake beams will have to be changed. On the 201 class locomotives the rivets in the mud ring will have to be countersunk in order to give clearance between the tire and the boiler. The cost will be: Class 101, 201 and 301, $775.00; Class 601, $850.00. No credit allowed on old tires.

PERSONAL.

Col. H. F. Hodges sailed for the States on his annual leave of absence on November 23.

Col. W. C. Gorgas, accompanied by his wife and daughter, sailed for Habana on November 28 to attend the convention of the American Medical Association.

Maj. J. P. Jervey, accompanied by his wife and daughter, and Capt. Courtland Nixon, with Mrs. Nixon, returned from their annual leave of absence on November 24.

Mr. A. L. Robinson, accompanied by Mrs. Robinson, is a passenger on the *Ancon* due to arrive at Cristobal on November 30.

Christmas at the Penitentiary.

In accordance with the practice of former years, the Christmas Committee for the relief of the convicts in the Canal Zone penitentiary will furnish a "treat" for the inmates on Christmas day. This treat consists of sweets, not including candies, fruits, nuts, and chewing tobacco. Contributions of any of these articles or of money will be received by the district quartermaster at any of the Canal Zone stations or they may be forwarded to the Rev. S. Moss Loveridge, penitentiary chaplain, or to Mrs. C. A. Devol, chairman of the committee. The funds remaining from the Christmas donations are apportioned by the committee to the relief of discharged convicts. The men are deported on being discharged and they are frequently entirely without means with the exception of the few dollars allowed to them by the government. The money is used to help them, often to purchase warm clothing, in case they are discharged in winter Cakes and all other articles intended for the Christmas dinner should be forwarded through the local district quartermasters on December 24.

EXECUTIVE ORDERS.

Authorizing the Employment of Alumni of the National School of Engineering of Mexico.

Such alumni of the National School of Engineering of Mexico as may be designated by the Mexican Government to observe certain public works in the United States and Panama may be employed under the several executive departments of the United States in connection with the works to which they may be assigned.

This order is issued in accordance with the principles of international comity to permit the action desired by the Mexican Government. As the matter is one relating to international courtesy rather than to the interests of the executive civil service, the Civil Service Commission makes no recommendation, regarding the wisdom of the proposed waiver as a matter pertaining to the Departments concerned.

WM. H. TAFT.

THE WHITE HOUSE.
November 6, 1911.

To Prevent the Unauthorized Purchase of Supplies and Equipment from Persons in the Army or Navy.

By virtue of the authority vested in me, I hereby establish the following order for the Canal Zone:

Section 1. Whoever shall knowingly purchase or receive in pledge for any obligation or indebtedness from any soldier, officer, sailor, or other person called into or employed in the military or naval service, any arms, equipment, ammunition, clothes, military stores, or other public property, whether furnished to the soldier, officer, sailor, or person under a clothing allowance or otherwise, such soldier, officer, sailor, or other person not having a lawful right to pledge or sell the same, shall be fined not more than Five Hundred Dollars, and imprisoned in jail not more than Two Years; and the Circuit Court of the Circuit wherein such supplies or equipment may have been unlawfully purchased or received in pledge shall have jurisdiction of the offense.

Section 2. This order shall take effect sixty days from and after its publication in THE CANAL RECORD.

WM. H. TAFT.

THE WHITE HOUSE.
November 15, 1911.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Cristobal, C. Z., Sunday, December 3, 1911, at 4:30 P. M. The program follows:

1. March—*Inspector General*....................Losey
2. Selection—*Naughty Marietta*.............Herbert
3. *The Rosary* (By request)...............Nevin
4. Overture—*The Four Ages of Man*..........Lachner
5. (*a*) Two Step—*Alexander's Ragtime Band*...Berlin
   (*b*) Rag—*The Oceana Roll*...................Denni
6. Waltz—*Salute to Munich*..................Gung'l
7. Reverie—*Thoughts of Home*.....Chas. E. Jennings
8. Medley Selection—*Snyder's Popular Songs*. .Schulz
9. March—*The New Colonial*....................Hall

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Hotel Tivoli on December 10, at 7:30 p. m.

Sale at Public Auction.

There will be sold at Public Auction, by the District Quartermaster, at the old corral, Ancon, 2 p. m., Saturday, December 23, 1911, to the highest bidder, for cash, the following Isthmian Canal Commission property: Ten (10) mules, (American) and one (1) pony, (native). The Government reserves the right to accept or reject any or all bids. For further information, apply to District Quartermaster, Ancon, Canal Zone.
C. A. DEVOL, *Chief Quartermaster.*

ISTHMIAN HISTORIC FAKES.

The "Life for Every Tie" Story—Origin of Names of Settlements.

The recrudescence of the time-honored "fakes" about the high mortality during the construction of the Panama railroad and the origin of the name of Matachin and that of other Isthmian settlements, seems to make desirable the publication from THE CANAL RECORD of December 25, 1907, of a part of a letter from Gen. George W. Davis, first Governor of the Canal Zone:

It may seem almost heartless to shatter and destroy the beliefs of the oldest as well as the youngest Isthmian inhabitants respecting the history of the name of Matachin, which is known to all Panamanians as that of a station on the line of the Panama railroad.

We have all been told of the dreadful mortality that attended the making of this railroad—one dead man for every cross-tie on the whole line. We were expected to believe this yarn, and most of us did, but when one reflects that the road was 47½ miles long, the number of ties, 22 inches apart and allowing for sidings, the whole would mount up to quite 140,000. F. N. Otis, in his "Handbook of the Panama Railroad," published in 1861, states that from the beginning of construction in August, 1850, to the driving of the last spike in January, 1855, or less than four and one-half years, the largest number of laborers employed at any one time was 7,000 and this number was not reached until 1852, or after

There was no city or even a village at Colon at that time, and Otis says the population of Panama in 1861 was only 10,000. He also asserts that from the opening of the road for through traffic in 1855 to 1859, a period of four years, 196,000 passengers crossed the Isthmus by rail, "and it is not known that a single case of sickness has occurred during or in consequence of the transit."

In view of these facts we may well believe that the "yellow journals" of that period are the best authority that exists for the extravagant statements of mortality resulting from the construction operations—statements that were given world-wide publicity and are still accepted as fact.

It is well known that many laborers were imported and used on this first large Isthmian work. There were some Chinamen included, and we have been told that these Orientals were overwhelmed with melancholy and suicided by the hundred—harikari, drowning and by throwing themselves in front of passing locomotives; and in crowning, indubitable proof of this, it is asserted that the site of one of these Chinese camps where the wholesale suicide occurred was given a name appropriate to the action recorded by it, *i.e.*, "Dead Chinamen," or, in the language of the inhabitants, "Matachin," a railroad station near Gorgona.

I have made some investigations as to the pedigree or etymology of this name. In any good Spanish-English dictionary will be found the word "matachin," meaning "butcher," as "matadero" means a "slaughter house."

But this alone would not be proof to those who accept the other as the better definition. It is easy to prove that the name is a geographic one, for as applied to this locality it is hundreds of years older than road-making.

In 1678, or seven years after the exploit of Morgan in the capture and sacking of old Panama, there was published in Holland by Esquemeling, a book entitled "Buccaneers of America." This was translated into English and published by William Crooke of London in 1684. One chapter is devoted to a description of Morgan's raid, and one of the illustrative plates in this first edition of Esquemeling is a map of the Isthmus, including, on the Caribbean side, the coast of Porto Bello to beyond the mouth of the Chagres, while on the Pacific it covers the coast from old Panama to Penonomee amd Nata, and served to make plain the operations of Morgan in his previous capture of Porto Bello and the assault and capture of Fort San Lorenzo at the mouth of the Chagres, the trip up the Chagres and across the highlands to the goal of the expedition—the city established by Pedrarias in 1519. The artist attempts to show a distribution of the Buccaneers, their marches; and the scene is also depicted of the turning loose upon the "pirates" of the herd of wild bulls.

As a work of actual topographical delineation the map has little merit, for the distances and the relative positions of well-known physical features are in no true relation one to the other, yet the map is most interesting in many ways. The Chagres and all of its principal tributaries are shown; the Rio Grande, Caimeto, Capira and Nata are all marked and named, as are also the settlements Porto Bello, Chagres, Cruces, Chame, Penonomee, Cocle, and Nata. Along the Chagres from its mouth to Cruces probably fifty names appear of bends, landings, islands and ranches. Here we find Barbacoas, apparently the name of a hill. That monkeys were playful in those early days is evident, for Bailemonos is marked. The incident—hanging of an alligator—seems to have occurred during or before the seventeenth century, for Ahorca Lagarto* is shown, and strangest of all, spelled exactly as now, is Matachin, and at just about the place that answers to this railroad station.

This map, be it remembered, was made in 1678, or earlier, and was republished in England in the English edition in 1684, so that more than two hundred years before the Chinese tired of life on the Isthmus (if they ever did), the name which is cited as proof of their self-destruction was known to the Buccaneers and doing business. It may have been the stopping place where the butcher, whose occupation it designates, supplied the weary travelers with fresh meat.

Is there any more truth in the yarn this name has been made to embellish than in the assertions in the "yellow journals" of 1850-55? The map-maker does not omit to delineate Limon Bay, as we call it now, but a few years ago it was Navy Bay, a name which has probably been evolved from one which Columbus was said to have bestowed upon this body of water. On Esquemeling's maps it is marked P. Naos, meaning Puerto Naos, *i. e.*, "ship port," for *nao* is the Spanish for ship. Another spelling is *nave* and the plural *naves* It is not difficult to guess that "Navy Bay" has been evolved from Puerto Naos or Puerto Naves, for we know that in the fifteenth and sixteenth centuries all vessels were armed, fighting ships, and there were no other naval vessels than such as traded, explored and raided, or pirated over and beyond the oceans.

The inspection of this map was most interesting and it has seemed that the statement of the fact respecting the pedigree of the word Matachin will be interesting to many Canal employes who have visited this place made memorable by the notable events transpiring on the Isthmus hundreds of years ago.

---

*Otis says in his "Handbook": "The next station is called Ahorca Lagarto, "to hang the lizard," deriving its name from a landing-place on the Chagres near by; this, again, named from having, years back, been pitched upon as an encampment by a body of government troops, who suspended from a tree their banner, on which was a lizard, the insignia of the Order of Santiago."

Rainfall from November 1 to 25, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	2 57	22	7.41
Balboa	1.80	22	5.34
*Miraflores	1 05	19	7.75
Pedro Miguel	.96	22	6.96
Rio Grande	2.67	11	13.53
Central Section—			
Culebra	2 28	11	12.30
*Camacho	2 22	4	12.35
Empire	2.78	11	11.72
Gamboa	2.28	11	10.07
*Juan Mina	1 55	22	10.38
Alhajuela	2.46	6	13.26
*El Vigia	1.58	4	9.45
*Gorgona	1.46	4	9.91
San Pablo	1.38	25	10.87
Tabernilla	2.00	25	11.82
Bohio	2 80	4	16.39
*Monte Lirio	3.17	11	19.18
Atlantic Section—			
Gatun	3.79	6	15.16
*Brazos Brook	7.55	7	18 29
Colon	2 98	7	14 53
Porto Bello	2.39	20	†14 12

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5.00 p. m. November 17.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending December 6, 1911. (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
November 30		4 25	10 18	4.40	10.50
December 1.		5 25	11.25	5 45	11.50
			P.M.		
December 2.		6 20	12.30	6 40	....
December 3....	12 45	7 10	1.20	7.30	......
December 4....	1 35	8 00	2.10	8.20	......
December 5..	2.25	8 50	3.00	9.10	......
December 6....	3 10	9 35	3.45	9.55	......

OFFICIAL CIRCULARS.

Use of Liquid Fuel.

CULEBRA, C. Z., November 25, 1911.

CIRCULAR No. 421:

Effective December 1, 1911, the following rules are prescribed in respect to the sale by the Panama Railroad Commissary, and the use by occupants of Panama Railroad Company and Isthmian Canal Commission quarters, of grain alcohol, wood alcohol, denatured alcohol, gasoline and naphtha, for use as fuel:

Sales of any of these liquid fuels from the Commissaries (at the present time alcohol alone is offered for sale) shall not be made in excess of one quart to any person at one time, and the containers in which sold shall have pasted thereon a warning label reading as follows:

(Name of Liquid Fuel)
Poison.
DANGER!

NOTICE.

This container must be kept in a cool, well ventilated place, removed from lights or fire. Lamps or burners must never be filled while lighted. Only one quart will be sold to a purchaser at one time.

Employes of the Isthmian Canal Commission and Panama Railroad Company are forbidden to keep more than one quart of any one of the liquid fuels above listed in the quarters occupied by them, and will be expected to strictly observe the provisions of warning label above quoted.

The departments of the Isthmian Canal Commission and Panama Railroad Company having charge of their respective family quarters will have printed on heavy, durable paper or cardboard, and distributed to the occupants of such quarters, for posting conspicuously in kitchens or elsewhere, a warning notice reading as follows:

WARNING NOTICE.

Alcohol, gasoline, benzine, naphtha or kerosene are easily ignited. They must be kept in a cool, well ventilated place, removed from lights or fire. Lamps or burners must never be filled while lighted. The pouring of any of these fluids on a lighted fire or live coals, or on inflammable substances which it is the purpose to ignite, is dangerous to life, and is absolutely prohibited.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Loss of Locomotive Tools and Oiling Equipment.

CULEBRA, C. Z., November 27, 1911.

CIRCULAR No. 411-A. (Superseding Circular No. 411.)

My attention has been invited to the frequent loss of locomotive tools and oiling equipment, resulting, in most cases, from the failure of engineers to see that tools and oil boxes are properly locked before they leave their engines.

Boxes and chains with locks for securing tools, etc., being provided on each locomotive, the loss of such equipment from this cause is inexcusable, and any such loss will, in the future, subject the engineer responsible to discipline.

Locomotive engineers will be expected to see that their engines are provided with a sufficient number of locks and boxes to insure the proper safeguarding of this equipment, and in any case in which locks or boxes have been broken and the equipment removed, they will be expected to report the same promptly to the foreman of the engine house where engine is tied up when not working, who shall, in turn, report the facts to the yardmaster.

Hostlers will make a personal inspection of the firing tools and boxes containing locomotive tools and oil cans on each engine assigned to them as early as practicable after the arrival of the engine at the engine house, and will report to the foreman the number of each engine on which firing tools and boxes containing tools and oil cans are unlocked.

Before an engine is released from an engine house for service it will be inspected by a hostler, who will personally see that it is provided with an adequate supply of coal or oil, water and sand; that the fire is clean and in proper condition; that steam is raised to the required pressure; and that the authorized tools and oil cans are on the engine, and that all firing tools and boxes containing locomotive tools are locked.

When an engine is delivered to the Gorgona Shops for general repairs, the engineer will turn over the tools thereon to the shop officials and obtain a receipt for them. When the engine is sent out of the shop the tools received with it will be issued to the engineer and the latter will receipt for them.

In order to assist in the identification of locomotive tools, etc., all such equipment will be numbered by the Mechanical Division with the number of the locomotive to which the same belongs. This numbering will be performed at the different engine houses upon the delivery of the equipment there by the different divisions concerned. When engines are transferred from one division to another the tools will be transferred with the engine to which they belong.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The following is the schedule of moving picture entertainments for the week of December 4 to 9: Monday, Corozal; Tuesday, Empire; Wednesday, Culebra; Thursday, Gatun; Friday, Cristobal; Saturday, Gorgona.

The standing of the teams in the Isthmian Basket Ball League on November 25, 1911, follows:

Team.	Won.	Lost.	P. C.
Cristobal	7	0	1.000
Gatun	5	2	.714
Culebra	4	3	.571
Gorgona	4	3	.571
Empire	1	6	.143
Corozal	0	7	.000

Results of games played on November 25, follow: Cristobal, 22, Gatun, 9; Gorgona, 20, Corozal, 15; Culebra, 26, Empire, 15.

Games to be played on December 2, are as follows: Gorgona at Cristobal; Empire at Corozal; Culebra at Gatun.

CULEBRA.

Representative Kinkead addressed a large audience on Wednesday evening, November 22.

The "Stunt" gymnasium class meets every Monday night at 8 o'clock, preceded by a discussion of some hygienic subject. Every man in Culebra is invited.

The following are the high scores in bowling for the week: Ten pins—Case, 210; Dougherty, 213; Warner 204; Herrington, 207.

The MacWatters Male Quartet will give a concert at this clubhouse on December 4.

The following is the standing in the billiard tournament:

Name.	Won.	Lost.
Beyer	4	0
Case	3	0
Hertz	2	0
Conlon	2	1
Janney	2	1
McCann	2	1
Peters	2	1
Thomson	3	2
Dubois	0	3
Hepler	0	4
Tragsdorf	0	3
Vogel	0	4

EMPIRE.

The following high scores were bowled on the alleys during the past week: Ten pins—Rodeghiero, 214, 201, 201; Huson, 201; Pinney, 201; Duck pins—Pinney, 110, 102, 112, 106; Rodeghiero, 100, 108, 113, 102; Scull, 138.

Sunday night, December 3, the MacWatters Quartet will be at Empire. A sacred concert will be rendered at 8.00 p. m. A return engagement is made for December 12.

The Gorgona Minstrels will show here December 5. Reserved seats on sale on the Monday preceding.

The Empire chess players have been organized and a tournament will be started at once.

GATUN.

The membership receipts for this month have already gone over the four hundred dollar mark.

The second rehearsal of the Gatun Y. M. C. A. Choral Club was held at the I. C. C. Chapel on Monday evening, November 27. Several new members were added.

The gymnasium classes will meet on Tuesday and Friday evenings of this week at 8 o'clock.

The military band of the Tenth Infantry, consisting of thirty pieces, will give a concert at the clubhouse on the evening of Thanksgiving Day. Recitations and vocal solos will also be rendered.

The Secretary led the Discussion Club Sunday evening when the members discussed the subject of "Housing and Sanitation".

Wm. Hayne, Thos. Frayne and Lyons Mussina have added their names to the Spanish classes.

Thirty-five men attended the lecture given by Dr. J. J. McCormick on Thursday evening, November 23, on "The Prevention of Tuberculosis".

Cristobal defeated Gatun in a match game of duck pin bowling held at Gatun on Saturday evening, November 25.

Over forty members of the clubhouse accompanied the Gatun basket ball team to Cristobal on Saturday evening, November 28. The men marched in pairs from the Gatun clubhouse to the Gatun depot and on arriving at Colon the march was resumed to the Cristobal clubhouse where the Gatun rooters were assigned the north alcove of the gymnasium.

The first concert of the MacWatters Male Quartet will be held at Gatun on Tuesday evening, December 5.

The tentative date for the Gorgona Minstrels at Gatun is December 19.

The general appearance at night of the entrance of the clubhouse has been greatly improved by the addition of two 60 watt electric lights.

GORGONA.

On Friday evening, November 24, two days after being put on sale, all the seats for the first appearance of the Gorgona Minstrel Show were disposed of. Popular demand is for a return appearance.

A local ten pin tournament is in progress. The players have been divided into six teams. Results to date have been as follows:

November 21.				
Team No. 6.	Stoehr, Burmaster, Misal and Sundquist, Burns, Sims	652	736	667
Team No. 3.	Kenney, Charnley, Heim, Swanson, Sexton	757	763	769
November 23.				
Team No. 5.	Lowe, Shady, Strock, Robbertson, Bishop, Roper	712	749	780
Team No. 2.	Arnold, Clements, Stewart, Dunlop, Bordt	748	766	813
November 22.				
Team No. 1.	Wurdeman, Denst, Otis, Niles, Humphrey	722	733	710
Team No. 4.	Orr, Trieber, Moyer, Haldeman, Demmy, Haggerty	665	739	759
November 25.				
Team No. 4.	Trieber, Moyer, Demmy Haldeman, Haggerty	700	702	732
Team No. 5.	Lowe, Shady, Strock, Robertson, Bishop, Roper	725	792	716

This makes the standing of the teams on November 25, as follows: No. 2, 1000; No. 6, 1000; No. 4, 500; No. 5, 500; No. 1, 000; No. 3, 000.

In the basketball game with Corozal on Saturday night, the line-ups were as follows:

Corozal.		Gorgona.
Cooper	Forward	Loudon
Roberts	Forward	Stevens
Morris, W. H.	Center	Johnson
		Swanson
Stapleton	Guard	Carpenter
Morris, W. R.	Guard	Earle

CRISTOBAL.

Two hundred and forty-seven people attended the address delivered on three principles of success "Common Honesty, Hard Work and Hope" by Hon. Frank B. Willis, Representative from the Eighth District of Ohio, on Wednesday evening, November 22, under the auspices of the Literary and Debating Club.

Three hundred and fifty-seven people packed the auditorium Friday evening, November 24, to see the motion picture entertainment. The class and quality of pictures recently shown have been greatly improved.

On Thursday evening, November 23, an exhibition of simultaneous checkers was given in the social room by W. S. Burnsee, a Commission employe formerly of Brooklyn. Mr. Burnsee demonstrated his ability in this line by meeting 18 players in 27 games continuous play, and winning all games except one win and one draw, both of which were credited to Mr. William Payton. Membership in this club is free to any member of the Y. M. C. A.

The Literary and Debating Club will render a public program on Wednesday evening, November 6. A feature of the program will be a public debate on "Resolved, that we advocate the disarmament of nations." The affirmative will be sustained by Messrs. Elliott, Starla and O'Neal; the negative, by Messrs. Morrisson, Dinnin and Wempe. There will be a piano solo by Miss Layland.

The next in the series of stated subjects in Christian sociology is "The Tuberculosis Crusade." Discussion will be held on Monday evening from 7.30 to 8.15. All men interested in this topic will be welcomed. The discussion will be lead by William E. Burrell, Assistant Secretary.

On Thursday evening, December 7, the MacWatters Quartet of Boston University will give a varied program, entertainment beginning at 8.15 o'clock.

About 250 people attended the championship basket ball game Saturday night, November 25, between Gatun and Cristobal, played at Cristobal. Cristobal won, 22 to 9.

The following high scores were made on the local alleys during the week ending November 25: Duckpins—Marquez, 108, 103, 100; Wheeler, 117, 103, 103, 100 Smith, 100; Barrett, 103, 102, 102; Farrell, 108; Jacques, 109; Bullard, 109. Ten pins—Bullard, 202, 212, 213; Thomas, 234; Louch, 217, 209; Henry, 213.

LOST—One small brown female hound, sharp nose and short tail, on the Mandingo River. A reward of $10.00 is offered for her recovery by Henry Jackson, Las Cascadas.

There have been no material changes in the cold storage price list since its publication in the CANAL RECORD of November 1.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Allianca	P. R. R.	Friday	Nov. 24
Colon	P. R. R.	Friday	Dec. 1
Advance	P. R. R.	Thursday	Dec. 7
Panama	P. R. R.	Thursday	Dec. 14
Allianca	P. R. R.	Wednesday	Dec. 20
Colon	P. R. R.	Wednesday	Dec. 27
Advance	P. R. R.	Tuesday	Jan. 2
Panama	P. R. R.	Tuesday	Jan. 9
Allianca	P. R. R.	Monday	Jan. 15
Colon	P. R. R.	Monday	Jan. 22
Advance	P. R. R.	Saturday	Jan. 27

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Friday	Dec. 1
Allianca	P. R. R.	Thursday	Dec. 7
Colon	P. R. R.	Wednesday	Dec. 13
Advance	P. R. R.	Wednesday	Dec. 20
Panama	P. R. R.	Wednesday	Dec. 27
Allianca	P. R. R.	Tuesday	Jan. 2
Colon	P. R. R.	Tuesday	Jan. 9
Advance	P. R. R.	Monday	Jan. 15
Panama	P. R. R.	Sunday	Jan. 21
Allianca	P. R. R.	Sunday	Jan. 28
Colon	P. R. R.	Saturday	Feb. 3

NEW YORK TO COLON.

Santa Marta	U. F. C.	Thursday	Nov. 23
Prinz Sigismund	H.-A.	Friday	Nov. 24
Oruba	R. M.	Saturday	Nov. 25
Metapan	U. F. C.	Thursday	Nov. 30
Prinz August Wilhelm	H.-A.	Saturday	Dec. 2
Zacapa	U. F. C.	Thursday	Dec. 7
Prinz Eitel Friedrich	H.-A.	Friday	Dec 8
Magdalena	R. M.	Saturday	Dec. 9
Almirante	U. F. C.	Thursday	Dec. 14
Prinz Joachim	H.-A.	Saturday	Dec. 16
Santa Marta	U. F. C.	Thursday	Dec. 21
Prinz Sigismund	H.-A.	Friday	Dec. 22
Clyde	R. M.	Saturday	Dec. 23
Metapan	U. F. C.	Thursday	Dec. 28
Prinz August Wilhelm	H.-A.	Saturday	Dec. 30
Prinz Eitel Friedrich	H.-A.	Friday	Jan. 5
Prinz Joachim	H.-A.	Saturday	Jan. 13

COLON TO NEW YORK.

Almirante	U. F. C.	Thursday	Nov. 30
Prinz Joachim	H.-A.	Tuesday	Dec. 5
Santa Marta	U. F. C.	Thursday	Dec. 7
Prinz Sigismund	H.-A.	Saturday	Dec. 9
Clyde	R. M.	Tuesday	Dec. 12
Metapan	U. F. C.	Thursday	Dec. 14
Prinz August Wilhelm	H.-A.	Tuesday	Dec. 19
Zacapa	U. F. C.	Thursday	Dec. 21
Prinz Eitel Friedrich	H.-A.	Saturday	Dec. 23
Thames	R. M.	Tuesday	Dec. 26
Almirante	U. F. C.	Thursday	Dec. 28
Prinz Joachim	H.-A.	Tuesday	Jan. 2
Santa Marta	U. F. C.	Thursday	Jan. 4
Prinz Sigismund	H.-A.	Saturday	Jan. 6
Metapan	U. F. C.	Thursday	Jan. 11

NEW ORLEANS TO COLON.

Heredia	U. F. C.	Thursday	Nov. 25
Abangarez	U. F. C.	Wednesday	Nov. 29
Atenas	U. F. C.	Saturday	Dec. 2
Parismina	U. F. C.	Wednesday	Dec. 6
Turrialba	U. F. C.	Saturday	Dec. 9
Cartago	U. F. C.	Wednesday	Dec. 13
Abangarez	U. F. C.	Saturday	Dec. 16
Heredia	U. F. C.	Wednesday	Dec. 20
Atenas	U. F. C.	Saturday	Dec. 23
Parismina	U. F. C.	Wednesday	Dec. 27

COLON TO NEW ORLEANS.

Turrialba	U. F. C.	Thursday	Nov. 30
Cartago	U. F. C.	Thursday	Nov. 30
Heredia	U. F. C.	Thursday	Dec. 7
Abangarez	U. F. C.	Thursday	Dec. 7
Atenas	U. F. C.	Thursday	Dec. 14
Parismina	U. F. C.	Thursday	Dec. 14
Turrialba	U. F. C.	Thursday	Dec. 21
Cartago	U. F. C.	Thursday	Dec. 21
Abangarez	U. F. C.	Thursday	Dec. 28
Heredia	U. F. C.	Thursday	Dec. 28

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct leave on Thursdays at 3 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, DECEMBER 6, 1911. No. 15.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Contract for Stoney Gates Valves.

Award for 114 Stoney gate valve machines has been authorized to the Wheeling Mold & Foundry Company. The original award under Circular 614 was for two of these machines, and the balance of the machines were to be purchased, provided the first two underwent satisfactory tests. These tests have been completed at the plant of the manufacturer, and the award has therefore been authorized.

Pyramidal Cap for Wall Forms.

In the construction of the cellular portion of the upper approach wall at Gatun Locks, it was found impracticable to dump the concrete directly from buckets into the 18-inch forms for the walls. The method adopted is to cap the inner forms for the rectangular cell with a pyramid of heavy boards. The concrete is dumped over the apex of the pyramid and flows down the sides in an approximately equal distribution among the forms at the base. Since all the concrete falls into the continuous space between two homologous rectangles, it can be packed evenly about the inner form without difficulty. At present the concrete is dumped from 2-cubic yard buckets by a stiff-legged derrick.

Excavation at San Pablo and Tabernilla.

Drilling preparatory to the excavation of the hill and railway embankment lying in the Canal channel at San Pablo, left there when the adjacent excavation was made because the hill was occupied by Commission quarters and the railway is a part of the main line of the Panama railroad, is about completed and steamshovel operations will begin shortly.

The Canal channel is 800 feet wide in this section but as the railroad crosses it on a curve the embankment to be removed is about 3,000 feet long. At its southern end a bench has been cut for the track on which the initial steamshovel will begin operations. The hill, just south of the station, rises to an elevation of 102 feet above sealevel and is principally of rock. The embankment is mostly of earth, and in the channel to the west of it are some slight knolls of earth. Of these, some of the material will have to be hauled to the dumps, while some may be thrown over into the corresponding depressions. This section of railroad will be abandoned about the middle of February, the trains running over the relocated Panama railroad, and the tracks will be torn up directly thereafter. It is expected to have the excavation completed by the end of April, 1912, when Gatun Lake will be dammed to raise its surface to 55 feet above sealevel.

Similar removal of railway embankment across the channel is to be made at Tabernilla at the same time. No extensive preparation has been made there, as the material is practically all earth and only about 15,000 cubic yards, as compared with some 258,000 cubic yards of mixed material at San Pablo.

Pacific Division Locks.

The berm cranes at Miraflores Locks have finished placing concrete on the northern part of the upper lock and are now at work at the lower end of the chambers. The tracks on which they moved are being torn up in their wakes and the backfilling for the upper lock is advancing to the south. The initial parts of the fills were made from the trestles by means of which the stock piles were supplied with sand and crushed rock, and after they were brought up to grade spur tracks were laid in order to extend the fill toward the locks. On each side the backfill will be at least 250 feet wide. The concrete for the completion of the north end of the side walls and for the wing walls, from which the berm cranes are now cut off, will be placed with derricks.

At Pedro Miguel, one of the chamber cranes is engaged in placing the filling of sand and rock screenings in the center wall. The other is placing concrete for the arches connecting the lock walls proper with the lower approach and wing walls.

An Inch of Rain a Minute.

All Isthmian records of excessive rainfall for short periods were broken at Porto Bello on the night of November 28-29 when approximately 2.46 inches of rain fell in three minutes between 2.07 and 2.10 a. m. The highest previous records of excessive rainfall were 0.75 of an inch in five minutes at Rio Grande in July, 1908, and 1.24 inches in ten minutes at Balboa in August, 1908. The total rainfall for the shower at Porto Bello was 7.60 inches.

Portable Pumps for Culebra Cut.

A portable pumping outfit, to be used for quick relief from flooding over relatively small areas of Culebra Cut, is under construction in the Central Division shops at Empire. On a flat car, formerly part of a steamshovel repair train, have been mounted two French centrifugal pumps, each capable of discharging 7,000 gallons of water per minute under a head of 20 feet, directly geared to a Westinghouse standard engine of 80 horsepower. The engine will be run by steam from the locomotive which draws the car. The 16-inch suction and discharge pipes on the pumps will have flexible joints to overcome the variations of surface of the flooded area.

The flooring of the car has been reenforced with a layer of 2-inch boards and the whole is covered with a corrugated metal roof, supported on stanchions at about 8 feet above the floor. About 12 feet of the length of the car have been made into a room for tools and repairs. The pumps and engine are grouped in the center of the remaining space. The outfit will be ready for service by the middle of the month.

Work of the Sandpiper.

During the month of November, the dredge *Sandpiper* working in the canal prism between Gatun and Mindi, excavated 257,563 cubic yards, place measurement, in 576 working hours. The number of actual engine hours was 476. The length of the pipe line was 3,000 feet, and the lift 20 feet. The largest weekly output during the month was 78,508 cubic yards—for the week ending November 25.

Dredge Brought from Nombre de Dios.

The eighteen-inch suction dredge No. 4, which had been engaged in sand excavation at Nombre de Dios, has, since the discontinuance on November 15 of supplying sand from that point, been brought to the dry dock for repairs, and will, when the repairs are completed, be placed at work in the sea level portion of the canal between Gatun and Mindi.

Laying Superstructure of Lumber Wharf.

The laying of concrete for the superstructure of the lumber wharf at Balboa was begun on December 1 and the first panel at the west end, is now completed. Each panel is to be the full width of the wharf, 55 feet, and extend 30 feet along the axis. The 50 concrete caissons on which the wharf is to rest have been set in a double row, at intervals of 30 feet; a panel is so constructed that its transverse central axis lies directly across the two caissons and the junctures are midway between the sets. Thus there will be 23 panels and at each end of the wharf a section, or half-panel, 15 feet long. All but 3 of the caissons have been sunk to full depth. These will be completed this week, after which another concrete laying outfit will begin operations at the east end of the wharf and the two will work toward one another. Each oufit has a ½-cubic yard portable mixer, with a Decauville car and tracks.

The floor of the wharf is 6 inches thick, heavily reinforced with twisted rectangular bars of steel and strengthened by 8 concrete beams, 3½ feet deep and 15 inches wide, ex-

NOTES OF PROGRESS.

(Continued.)

tending longitudinally. A single railway track of 70-pound rails is being set in the concrete, with its center 10 feet from the outer edge of the wharf.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 72 per cent completed, 163,293 cubic yards, out of a total of 225,000, having been placed at the close of work on December 2. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
November 27	116	5.30	1
November 28	38	3.00	1
November 29	....	....	....
November 30	....	....	....
December 1	96	5.30	1
December 2	12	.30	1
Total	262	14.30	1
Previously reported	163,031		
Grand total	163,293		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending December 2, follows:

DATE.	Hours worked.	Cubic Yards.
November 27	3.04	1,346
November 28	4.00	2,072
November 29	4.50	2,032
November 30	....	....
December 1	2.45	1,298
December 2	3.52	1,847
Total	18.31	8,595

Ancon Crusher.

DATE.	Hours worked.	Cubic Yards.
November 27	8.30	3,001
November 28	8.20	2,948
November 29	8.10	3,274
November 30	....	....
December 1	7.10	3,192
December 2	8.35	2,614
Total	40.45	15,029

Cargo for Isthmus Aground.

The Chief Quartermaster has been advised by W. Andrews & Company, agents at Colon for the Munson Line, that the steamship *Moldegaard*, which sailed from Baltimore on November 19, bearing a considerable quantity of goods consigned to the Commission and the McClintic-Marshall Construction Company, went aground at Cat Island, in the Bahamas. The agents have received no further information than the cablegram, dated November 29. "*Moldegaard* ashore at Cat Island." The goods for the Commission were mostly coke, nails, steel plate, lard oil, paints, bolts nuts, rivets, vitrified pipe, tie plugs and 32,600 feet of oak lumber.

The *Moldegaard* was built in 1906 at Bergen, Norway, and registered there. It is a single screw vessel, 321 feet in length, 45 feet beam, and of the net tonnage of 1,754 tons. It has been sailing under command of Capt. P. Wiig.

New Fill North of Ancon.

The Central Division has begun, with spoil from Culebra Cut, a fill which is to extend over the triangular area enclosed by the main line of the Panama railroad, between Balboa Junction and Panama, the dirt train tracks which swing westward from Balboa Junction, and the Panama railroad line to Balboa, which intersects both of the former as it skirts Ancon Hill and runs approximately east and west. The area of the triangle is 61 acres. From its present average elevation of 6 feet above sealevel it is to be raised approximately 14 feet, so that about 1,380,000 cubic yards of earth will be used in making the fill. The surface will be sloped to drain towards the north, away from Ancon and Panama. Plans for drainage have not been completely determined. The area is crossed by a branch of the Curundu River and a number of tributary drains.

CONCRETE WORK IN THE LOCKS.

Over 72 per cent of the concrete for the locks is in place, the amount at the close of work on December 2, being 3,051,746 cubic yards, out of a total of approximately 4,199,400. A total of 20,663½ cubic yards of concrete was laid in the locks during the week ending December 2.

GATUN LOCKS.

Over 86 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on December 2 being 1,725,685 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending December 2, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
November 27	1,430	25.06	6	378	3.40	2	40	1,923½
November 28	1,234	20.32	6	334	5.40	2	0	1,629½
November 29	764	13.30	5	196	2.40	2	0	1,050½
November 30	(Holi'ay)							
December 1	1,038	17.36	4	312	3.40	2	0	1,424
December 2	1,380	24.55	8	394	3.40	2	24	1,879
*Portable mixers	....	....	......	382½	....	......	....	
Total	5,846	101.39	5.8	1,996½	17.20	2	64	7,906½
Previously reported	....	....	......	....	....	......	....	1,717,778½
Grand total	....	....	......	....	....	......	....	1,725,685

The 383.5 yards shown for the portable mixers are reinforced concrete, and were placed on the following days; November 27th, 75½; November 28th, 61½; November 29th, 90½; November 30th, 0; December 1st, 74; December 2nd, 81.

PEDRO MIGUEL LOCKS.

Concrete work in the locks at Pedro Miguel is over 92 per cent completed, 777,515 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on December 2. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
November 27	592	15.50	3	175	15.00	3	....	767
November 28	612	16.00	3	221	14.00	2	....	833
November 29	526	15.00	3	190	13.00	3	....	716
November 30....(Holiday)								
December 1	534	16.00	3	154	10.50	3	....	688
December 2	606	18.00	3	210	15.00	3	....	816
Totals	2,870	80.50	3	950	67.50	2.8	....	3,820
Previously reported	....	....	......	....	....	......	4,423	773,695
Grand totals	....	....	......	....	....	......	4,423	777,515

MIRAFLORES LOCKS.

Over 40 per cent of the concrete for the system of two twin locks at Miraflores was in place on December 2, the total amount on that date being 548,546 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Nov. 27	1,624	45.80	7	428	6.30	1	203	15.50	3	....	2,255
Nov. 28	1,114	38.00	7	466	6.80	1	216	18.00	3	....	1,796
Nov. 29	624	23.00	5	602	8.20	2	182	20.00	3	....	1,408
Nov. 30	(Holi'ay)										
Dec. 1	1,006	29.50	7	702	11.25	2	243	22.00	3	....	1,951
Dec. 2	1,055	42.50	7	308	6.00	2	164	10.50	2	....	1,527
Totals	5,423	178.80	6.6	2,506	38.55	1.6	1,008	86.00	2.8	....	8,937
Previously reported	....	....	....	....	....	....	....	....	....	3,693	539,609
Grand total	....	....	....	....	....	....	....	....	....	3,693	548,546

HYDRO-ELECTRIC PLANT.

Contracts Awarded for Machines at Gatun Power Plant.

Award of the contract for the hydro-electric power plant at Gatun has been authorized to the Pelton Waterwheel Company for the water turbines at $85,200; the General Electric Company for the generators at $54,534; and the Niles-Bement-Pond Company for cranes at a price to be determined after the power plant lay-out has been decided upon and the span of the cranes can be fixed. Three bids were received on the turbines, and three on the generators, and these permitted eight different combinations, of which the Pelton-General Electric, was the most advantageous. There were also three bids on the crane equipment.

Circular 648, under which the awards have been made, called for three classes of machines —(1) 3 water turbines of 2,250 k. w. capacity, 3 governors, 3 head gates, 3 penstocks, 3 compressed air regulators, and one lubricating system. (2) 3 electric generators of 2,000 k. w. capacity, 3 exciters of 50 k. w. capacity, 2 motor driven exciter sets of 100 k. w. capacity, (3) one 20-ton, 3-motor traveling crane.

The equipment is for the generating station that will furnish current for power to operate the gates, valves, and other machinery of the locks, the regulating works of the spillways of Gatun and Miraflores dams, and will furnish light for the same, as well as light and power along the Canal. Two proposals were requested, one for a plant to be installed in the center of the Dam at the Spillway and the other below the Dam at the Spillway, the theoretical advantage of the latter location being greater head. Water for both plants would be taken from Gatun Lake at the Spillway, where regulating gates will keep the maximum elevation as near 87 feet above sealevel as possible, and where, at the end of the four months' dry season, the water may fall as low as 79 feet above sealevel. From a concrete forebay in the Spillway dam, water will be carried in penstocks, equipped with headgates and regulators to the turbines.

For proposal No. 1, the average difference between the water levels in the lake and in the tailrace was estimated at 75 feet, and the turbines were rated on this basis, and were to be of the vertical type. For proposal No. 2, the turbines were rated upon the basis of an average difference of 83 feet in elevations.

The location referred to as No. 1, that is, where the power station is near the head of the Spillway and the tailrace arches already built in the Spillway wall can be utilized, has been decided upon. The amount of water available for power purposes when the storage of the lake has to be drawn down, that is during the dry season, will be 275 cubic feet per second. At the upper location 275 feet per second is equivalent to 2,342 horsepower, (theoretical) and will generate 1,390 k. w. at the switchboard. At the lower location the power would be 2,593 horsepower, and 1,536 k. w. respectively.

It is estimated that it would cost from $100,000 to $200,000 more to install the plant at the lower location. Even in unusually dry seasons there will be more water than will be required for all the lockages that time will permit. It has been determined, therefore, not to incur extra expense to obtain the additional head of 10 per cent at the lower site.

In the bid on which award has been authorized, the Pelton Waterwheel Company undertakes to furnish three single runner, scroll case, vertical shaft, turbines of 250 revolutions per minute, and other necessary items of Class 1 for $85,200. It guarantees satisfactory regulators with fly wheel effect of 600,000, without surge tank, and, if these machines are installed, recommends the omission of the proposed regulating system, which would effect a saving of from $7,500 to $9,000. Delivery is promised to begin in three months and end in five.

In Class 2 the General Electric Company undertakes to furnish three generators, 250 revolutions per minute, fly wheel effect of 600,000, weight 116,200 pounds together with other items in this class for $54,534. This type permits the omission of the mezzanine floor in the power house, the bearing for the rotating parts being located on the top of the generator case. Machines of this type have been in successful operation for four years, and a similar arrangement of the bearing is not unusual in vertical motor generator sets, where the weight of the rotating parts is greater than in the proposed combination of water-wheel and generator. The omission of the mezzanine floor in the power house results in a considerable saving in the cost of the building. Delivery under the contract will begin in 140 days and be finished in 200 days.

Teeth for Ladder Dredge Bucket.

In hope of augmenting the capacity of the ladder dredges, the Atlantic Division will experiment with teeth on the cutting edges of several buckets. As made at present, each bucket is provided with a sharpened edge of Manganese steel, 6 inches wide, around the circular front which scrapes into the rock. For the experiment, two teeth, 5½ inches long, 4 inches wide and 8½ inches apart, are riveted to the cutting edge. They are held in place by 30-inch shanks, which clasp the side of the bucket and are connected by 5 heavy rivets. The teeth are modeled on those of steam-shovel dippers and are wedge-shaped, with a base 4¾ inches through.

Five buckets so provided with teeth will be tried first on ladder dredge No. 1, working in rock at the Atlantic entrance. If the results are satisfactory all of the ladder dredges in use by the Atlantic Division may be similarly equipped.

Red Men Inter-Tribal Meeting.

There will be a joint meeting of all the Tribes on the Isthmus, in the Wigwam of Carib Tribe No. 7, at Las Cascadas, next Sunday, December 10, at 2.00 p. m.

Several matters of importance to every Tribe are to be brought up at this meeting, and it is earnestly requested that as many as can make it convenient, attend this meeting. Visiting Red Men are always welcome. Refreshments will be served.

W. H. Kromer, D. G. I.

Cristobal, C. Z. December 5, 1911.

The Royal Mail Steam Packet Company.

In the future the Royal Mail Steam Packet Company will grant a reduction of 25 per cent on all tickets, first or second class, to army officers, soldiers, their wives and children traveling on their line, which is the same rate that is granted to employes of the Isthmian Canal Commission and Panama Railroad Company. It will be necessary for all such officers and soldiers to produce a certificate from their commanding officer stating that the holder is entitled to the reduced rate.

Missing Men.

Any one having information regarding the present whereabouts of Samuel Morris, and Schuyler C. Vaterford, former employes of the Department of Building and Construction, will please communicate with John J. Keegan, Dania, Florida.

The committee that had in charge the collection of a purse of money for the widow of the late Capt. Edwin Hammond of the Panama Railroad Steamship line, has received a letter of acknowledgement from Mrs. Hammond.

Rainfall from November 1 to 30, 1911, Inclusive.

Stations.	Maximum in one day.	Date.	Total for period.
Pacific Section—	Ins.		Ins.
*Chorrera	1.80	23	8.90
Ancon	2.57	22	7.57
Balboa	1.80	22	5.55
*Miraflores	1.11	28	9.24
Pedro Miguel	.96	22	7.49
Rio Grande	2.67	11	13.62
Central Section—			
Culebra	2.28	11	12.37
*Camacho	2.22	4	12.43
Empire	2.78	11	11.73
Gamboa	2.28	11	10.09
*Juan Mina	1.55	22	10.45
Alhajuela	2.46	6	13.39
*El Vigia	1.58	4	9.54
*Gorgona	1.46	4	10.23
San Pablo	1.38	25	11.18
Tabernilla	2.00	25	12.15
Bohio	2.80	4	17.01
*Monte Liro	3.17	11	20.05
Atlantic Section—			
Gatun	3.79	6	15.78
*Brazos Brook	7.55	7	18.86
Cristobal	2.98	7	15.81
Porto Bello	6.49	29	24.40
*Bocas del Toro	2.35	15	7.99

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, December 2, 1911. All heights are in feet above mean sea level.

Day and Date.	Station.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Nov. 26	127.6	93.9	47.1	19.3	18.6
Mon., Nov. 27	127.3	93.4	46.6	18.8	18.4
Tues., Nov. 28	127.2	93.4	46.4	18.5	18.2
Wed., Nov. 29	130.0	95.4	49.2	18.5	17.8
Thurs., Nov. 30	127.4	93.8	47.3	18.3	17.6
Fri., Dec. 1	126.9	93.4	46.4	17.7	17.4
Sat., Dec. 2	127.0	93.4	46.2	17.2	17.0
Height of low water	125.0	92.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending December 13, 1911. (75th meridian time):

Date.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
December 7	......	4.00	10.20	4.30	10.40
December 8	......	4.45	11.10	5.20	11.30
December 9	......	5.35	11.56	6.05	......
			P.M.		
December 10	12.22	6.22	12.45	6.58	......
December 11	1.15	7.15	1.38	7.52	......
December 12	2.12	8.13	2.35	8.52	......
December 13	3.15	9.20	3.40	10.00	......

Lost—I. C. C. service medal on Panama railroad train between Gatun and Colon on Thanksgiving day. Finder please return to C. D. Hunter, Cristobal.

THE LAKE VILLAGES.

Hamlets and Towns whose Sites Will be Covered by Gatun Lake.

The villages between Gatun and Matachin will be covered by the water of Gatun Lake. They have never been important in the sense of size, or as the center of any peculiar type of life. In fact they are little more than jungle hamlets, yet they have a distinct place in American history, because they were known to European civilization many years before Jamestown was settled or Massachussetts Bay was an English colony.

In THE CANAL RECORD of November 29, there was republished a letter in which attention was called to the fact that the names of some of these villages appeared on the map published with Esquemeling's narrative of the Buccaneers in 1678. Most of them antedate that time, for they were not named by the English who plundered with Morgan, but are spoken of in Esquemeling's book as places already known, and invariably they bear Spanish names. It is probable that most of them date from the early days of navigation on the Chagres River, when it was one of the most used routes for commerce across the Isthmus. Among these are Ahorca Lagarto, Barbacoas, Caimito, Matachin, Bailamonos, Santa Cruz, Cruz de Juan Gallego, and Cruces (Venta Cruz).

As early as 1530 Spanish ships sailed down the coast from Nombre de Dios and entered the Chagres, whence their goods were transferred to canoes and taken up the river as far as Cruces, a distance of 36 miles from the river mouth, near the point where Culebra Cut begins. From Cruces they were taken overland to Panama. At times of high water, when the stream could be navigated readily by shallow boats, this was the easiest route across the Isthmus, although the trails from Nombre de Dios and, after 1586, from Porto Bello were kept open and were much used by pack trains. The harbor at the mouth is not so safe as those of Nombre de Dios and Porto Bello, and yet that the trade by this route was not inconsiderable is attested by the fact that the entrance to the Chagres was guarded by a fort (San Lorenzo). The river hamlets were of the type of the settlements that grew up along the highways during the days of travel by coach and saddle, and their people probably subsisted as much by the trade they drove with travelers as by the products of their own fields. Yet Esquemeling speaks of cultivated fields, so there was undoubtedly some farming along with the travel trade.

The river trade became steadily less after the reign of Philip II, because Spain's monopoly was gone, and the all-water route to Peru by the Strait of Magellan was found less dangerous. But this was because the trade itself was less, for the Chagres route continued in use up to the time of the completion of the Panama railroad in 1855. Since then the villages in the lake region have been "way stations," with two brief periods of prosperity, one when the French were working nearby them, and the other when the Americans were carrying on their operations.

The region in which these lake settlements are situated will probably not be under water before August, 1912, but the railroad track will be torn up in February, and therefore the native hamlets and American canal settlements are being moved, the houses torn down to be erected again elsewhere, or in the case of shacks merely abandoned in the jungle. It is difficult to persuade some of the inhabitants that the inundation will ever take place. One old bush settler, after receiving repeated warnings heedlessly, ventured it as his opinion that the Lord had promised never again to flood the earth. Such people as these will be assisted in their moving, because the present hamlets will be isolated when the railroad is torn up and in case of a sudden rise in the river, with the backing up of water after the Gatun spillway dam is raised, it would be difficult to rescue them.

In this blotting out of the river hamlets and of one of the world's historic trade routes, nothing of value will disappear; only a few shabby hamlets, and a hundred or more isolated huts in the jungle; while the river route will give way to the Canal, and the railroad to a straighter and better line outside the lake area above all danger of flood.

In the hamlets and the jungle there are three distinct types of buildings, in addition to the quarters for canal employes. Of these the most picturesque and primitive is the open hut in the jungle, which consists of a palm thatch raised about eight feet above the ground on bamboo poles. Here a bush family has its incongruous being, for this jungle home is often within sight of the railroad trains, and within it one sees plantain being fried in a modern kettle over a modern brazier, while the drinking water is dipped with a gourd from a square, gallon capacity, oil can. A little more advanced type of dwelling is the pretty hut made of closely set bamboo sticks, sometimes plastered with mud, and with the broad overhanging thatched roof, in which lizards and bugs rustle about day and night. There are none of the more substantial native huts, found in some of the villages in the interior of Panama, built of clay blocks and covered with overhanging pantile roofs. The third type of house, although more modern, can scarcely be considered an advance on the bamboo hut. It is built of lumber and covered with a corrugated iron roof. Old residents of the Isthmus say that this type is due to the easy pilfering of lumber and roofing iron, left in storehouses and on isolated buildings by the French canal builders, and that it was unknown before 1885. Usually these buildings have been arrested in dissolution by patches of soap boxes or tin flattened out from old cans, which gives them a motley look. The village stores are little better than this latter type of dwelling. Here and there one sees in a settlement of such nondescript houses, the trim little cottages built by the French and more recently used by the Americans; and the more airy and well screened quarters of the American canal period. These, however, are late additions. The original villages were jungle settlements existing because of the isthmian transit.

The old village of Gatun, which lay on the river flats below the present town was abandoned in 1908, and the site is now covered by 80 feet of rock and earth under Gatun Dam. At the time it was abandoned, the village contained a church, priest's house, school, a dozen small shops, and ninety or more small houses of all descriptions, from the bamboo hut with palm thatch to the typical sheet iron roof shanty. Most of the buildings were moved to the new townsite, now known as New Gatun. The railroad line also ran through the dam site and as soon as the present line into Gatun was opened, this likewise was abandoned, and the station building was razed. By the middle of 1909 the last vestiges of the old village had disappeared before the encroaching work on the dam.

The antiquity of the place is uncertain, because none of its buildings were of masonry. In his narrative of the pirate Morgan's march to Panama in August, 1670, Esquemeling says "The first day they sailed only six leagues. and came to a place called De los Bracos. Here a party of his men went ashore, only to sleep and stretch their limbs, being almost crippled with lying too much crowded in the boats. Having rested awhile, they went abroad to seek victuals in the neighboring plantations; but they could find none, the Spaniards being fled. and carrying with them all they had."

The location on the river corresponds to that of Gatun, for six Spanish leagues equal about nine miles, and even if the situation of De Los Bracos is not identical with old Gatun the narrative indicates that the region thereabouts was somewhat settled. It is also known that the Spaniards had erected a fort on a hill 120 feet above the river, overlooking the town, which was probably one of the outposts they had established at various points along the isthmian trade routes. Evidences of the old fort are found to-day, and the site is shown on the original land map made for the Panama railroad in 1855. At that time the village had about one hundred buildings of all kinds. Writing of it in 1861 Otis says it was a village composed of forty or fifty huts of cane and palm. In the early days of the California immigration it was the first stopping place in the canoe journey up the Chagres, where "bongo-loads of California travelers used to stop for refreshments on their way up the river, and where eggs sold four for a dollar, and the rent for a hammock was two dollars a night."

In 1881 the French chose Gatun as the site for one of the canal residencies, erected machine shops there, and built a number of quarters for laborers, calling the new section, "Cite de Lesseps." This continued as a center of the work of excavation until 1888 when all operations ceased, not to be resumed here until 1904.

When the Americans arrived in 1904, Gatun was the center of a comparatively large river trade. Bananas and other produce from the Gatun, Trinidad, and Chagres Rivers were brought there for transhipment by rail, and for sale. Once a week, a shipment of from seven to nine carloads of bananas was made, and on the shipping day, as many as a hundred canoes would tie up at Gatun.

The next settlement of any importance up the river from Gatun is Bohio. Between these two villages are three hamlets, Lion Hill, Tiger Hill, and Ahorca Lagarto, none of them numbering over half a dozen huts and without any apparent reason for existing except that some bush negroes or natives happened to settle there. The two first mentioned are essentially railroad camps that have persisted since 1851, when they were successively the terminus of the road. Ahorca Lagarto, however, is on a bend in the river, and may well have been a resting place for the cramped travelers in canoes. Of the origin of its name Otis says: "Ahorca Lagarto, 'to hang the lizard,' deriving its name from a landing-place on the Chagres near by; this again, named from having, years back, been pitched upon as an encampment by a body of government troops, who suspended from a tree their banner, on which was a lizard, the insignia of the Order of Santiago." In 1908 it had sixty-two inhabitants,of whom three were white, two yellow, and the balance negro.

Bohio appears to have been another bush hamlet in 1862 when Otis wrote. Until recently it has been called Bohio Soldado (Soldier's Home). The French made it the site of one of their district headquarters in 1862, erected a machine shop on the west bank of the river, and did considerable work there under the old sealevel plan for a canal, which was excavated to this place to a sufficient depth for light draft boats. Here as well as at any place can be seen today the plan of the sealevel canal, which included the main channel and two large diversions or drainage ditches one on each side of the canal proper.

Under the French plan for a lock canal, Bohio was the site of the first dam, and the excavation for the locks at this point can be seen in one of the hills on the opposite side of the river from the railroad. As it has existed during the American regime the village has been a relic from the French period. Such surveys, investigations, and excavation as were necessary here were done by men occupying the French houses. In recent years Bohio has been the center of a small local trade in vegetables, brought in from the jungle by canoe and pack animals, in exchange for groceries and liquors sold in the Chinese and native shops. At the time of the official census in 1908, it had 526 inhabitants of whom 447 were colored and native, 69 white, and 10 Chinese.

At Bohio the Americans carried on investigations in 1904 and 1905 to determine whether that location could be used for locks and a dam, and in 1909 excavation by hand and with steamshovel was carried on to remove a small hill and part of a dump made by the French, which stood in the canal prism. Across the river, where the machine shops were situated in the French days, and where they carried on work for the lock emplacement, the edge of a hill is now being removed by a contractor. The work at this point is typical of all that between Gatun and Culebra Cut, consisting as it does of the excavation of small elevations in the Canal channel and the toes of hills that project into the prism.

Near Bohio are the hamlets of Penas Blancas and Buena Vista, both on the river, and each merely a collection of huts of various descriptions. Frijoles is the next railway station, a village of 784 inhabitants in 1908, of about a thousand when it became a center for relocation work on the Panama railroad, now being rapidly deserted. Here for many years an old Frenchman ran a distillery in which he made rum of such good quality that he boasted that it was sold in Colon to rectifiers who made it into "genuine French cognac." One of the familiar sights of this hamlet is the village washing place a pool near the railway tracks, formed by the swirling of the water in the Frijolita River at a point where it is turned at right angles to its previous course by the interposition of a bank of clay and rock. The method of washing clothes among the lower class natives and West Indians can be observed here. This also is locally known as the place where one may buy bananas of peculiarly delicious flavor.

Frijoles is mentioned in Otis' guide book published in 1862, but the next village, Tabernilla, although it appears on the Harrison-Arosamena map, is not. It was one of the centers of the French work, and there was a small field repair shop at this point, with a few buildings that served as quarters for the working force. During the American occupation it became a village of over two thousand inhabitants (2,079 in 1908), because here is situated the largest dumping ground on the canal work. The location was chosen in 1906 because it is on the main line of the railroad, outside the canal prism and afforded a plot of ground two miles long and almost as wide for wasting of spoil. In all about sixteen million cubic yards of material were wasted here, all of which will be below the level of the lake. The dump was abandoned at the close of 1910, and immediately the village population decreased, the people remaining there being largely employes with families who could not procure quarters elsewhere. These are now being moved because the demolition of the place is under way.

Between Tabernilla and San Pablo the railroad crosses the Chagres River at Barbacoas. The original bridge was built of wood but early in the history of the railroad it was replaced by a bridge of six wrought iron through plate girder spans ranging from 101 to 109 feet in length, supported upon seven masonry piers. This bridge is mentioned by Otis in 1862, and is said to have been one of the first of its type ever constructed. It was not built however to carry such heavy rolling stock as that placed on the road by the Americans, and so the three channel spans were replaced in 1908 by heavier girders, while the floor system of the three remaining spans of the old bridge was reinforced.

San Pablo was originally a plantation worked by Catholic priests. It was a railroad station in 1862, was a laborer's camp in the French days, and during the American occupation has been a small canal village. It also is being demolished, and the last excavation in the lake region is now in progress there. Across the Chagres river from San Pablo is Caimito, one of the names found on Esquemeling's map. It was a canal labor camp in the French time and also under the Americans until the work at that point was finished. Of this class, also, is Mamei, likewise a railroad station in 1862, and little more than that today, although it was the location of several quarters for Canal workers a few years ago.

Gorgona bears the name given by Pizarro to an island off the coast of Colombia, near Buenaventura, because he found around it such treacherous currents. It may be that this name was adopted arbitrarily, or that the Chagres river travelers found in the river at this place some eddies that reminded them of the currents at Gorgona Island. Of this place Otis says, "The native town of Gorgona was noted in the earlier days of the river travel as the place where the wet and jaded traveler was accustomed to worry out the night on a rawhide, exposed to the insects and the rain, and in the morning if he was fortunate regale himself on jerked beef and plantains." In the French time large shops were situated here, at the point where the American shops now are, known as Bas Matachin.

Gorgona should not be classed with Gatun and Bohio as a purely jungle hamlet because it appears to have been a settlement of some size long before the railroad was built. It was one of the places at which river travelers stopped for the night, and all about it were cultivated farms. At the time of the first Canal Zone census in 1908 its inhabitants numbered 1,065 whites, 1,646 blacks, and 39 Chinese, a total of 2,750. The population has increased owing to the expansion of work in the shops The site of the shops and the lower parts of the village will be covered by the water of Gatun Lake, and, therefore, the shops will be moved in about a year to the site reserved for the permanent marine shops at Balboa.

In The Canal Record of November 29, 1911, there was published an article telling of the origin of the name Matachin as applied to the village next to Gorgona. It was the place, half way between Panama and Colon, at which trains passed one another in the early years of the railroad. In 1908 it had 2,042 inhabitants of whom 698 were whites. Like all the lake villages it has experienced small booms according as the canal work has waxed or waned.

WOMEN'S CLUBS.

Activities of Canal Zone Organizations.

The activities of the women's clubs during the month of November have continued as usual. Some of the programs have been devoted to the discussion of national festivals, and all are looking to their share in the usual Christmas celebrations. The clubs are also preparing for the annual meeting of the Federation in January. At a meeting of the executive board held at Empire on November 6, plans for the convention were discussed and some of the details settled. Every effort will be made to make this a notable meeting in the history of the federation. Invitations to women's organizations in the Canal Zone will be extended. A program of music is promised for the afternoon session and there will be special speakers. The Cristobal club is in charge of the social arrangements. It is expected that the meeting will be held on Saturday, January 21.

The programs of the Cristobal Woman's Club in November were as follows: On November 15, under the home department, "Garbage Disposal;" on November 8, under the same department, "Home Life in Switzerland;" on November 15, an exhibit of the Federation art collection with papers on the world's masterpieces. The club has contributed over one hundred dollars to the anti-tuberculosis work in Colon as a result of the annual benefit ball in November. The home department is engaged in preparation for assisting the community in its celebration of Christmas. The program for this month is—December 6, "Primary Education;" on December 13, "Home Life in England;" on December 20, "The World's Great Cathedrals;" on December 27, a meeting of the executive board.

The Gatun Woman's Club held the first meeting in November at the home of Mrs. V. V. Sessions, under the home committee, and the social committee entertained on Thursday evening, November 22, when 50 persons were present. The club has appointed a committee to act with the playground association on the question of raising funds for the necessary repairs and maintenance of the playground. This playground was established in 1910, funds for the purpose being raised by a carnival. It has now become necessary to raise funds for the purpose of keeping the playground in repair. The first meeting of the club in December will be held at the home of the president, Mrs. Allen, on Thursday, December 7.

The programs of the Paraiso Woman's Club have included the discussion of current events, woman suffrage, and home sanitation. The club has started a plan for a general Christmas celebration for the children of the village, the means chosen being popular subscription and voluntary donations. For this purpose boxes are placed in conspicuous places to receive donations. It is expected that the response will be generous and as there was no celebration in the village last year, it is hoped to make this an especially successful one.

Church Notes.

A young people's Bible class has been organized at Gorgona with about 25 members, the object being to promote the attendance at the Sunday services in the chapel and to encourage the young people to meet together frequently in social intercourse. Miss Ruth Hackenberg is the president and Mr. E. M. Reinhold is the secretary. Mr. T. S. Booz is the organizer and class teacher. The society meets at the call of the president about every fortnight and a social meeting is held once a month.

St. Luke's Sunday School.

The eleven o'clock hour for holding the sessions of the Sunday school of St. Luke's Church, Ancon, has been found impracticable and beginning with Sunday, December 10, the school will be held from 9 to 9.45 a. m. as heretofore. The Sunday school is especially maintained for the children in the hospital grounds and those living near. The session is purposely short and there are three teachers. A Christmas celebration will be held in the church on December 28, for the children of the school. Christmas carols will be sung and there will be a short service.

Obituary.

Mrs. H. E. Cecil, mother of Clyde Cecil of Empire, died at Colon on November 26. She was born in Alabama 44 years ago, was a widow, and had been on the Isthmus eighteen months.

H. G. Benion, an employe of the Mechanical Division living at Empire, died on November 28 at Ancon Hospital. He was 32 years of age, and had been on the Isthmus a year and four months, coming here from Harrisburg, Pa. He is survived by his wife, who is living at Empire.

Edward Mc[illegible]vers, an employe of the Mechanical Division at Gorgona, died at Ancon Hospital on November 30 as the result of injuries received at the Gorgona shops on November 29. He was 43 years of age, married, and had been on the Isthmus 2 years, coming here from Jacksonville, Ill. He is survived by his wife.

United Spanish War Veterans.

Chagres Camp No. 2, U. S. W. V., will hold a meeting at 2.30 p. m., December 10, in the lodge hall at Culebra, when officers for 1912 will be elected.

The newly organized chapter of the Order of the Eastern Star, Gorgona No. 1, celebrated its first Thanksgiving day by a special meeting in the afternoon of November 30. A social meeting followed the business and refreshments were served. There were 53 present.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The following is the schedule of moving picture entertainments for the week of December 11 to 16: Monday, Culebra; Tuesday, Corozal; Wednesday, Empire; Thursday, Cristobal; Friday, Gorgona; Saturday, Gatun.

The MacWatters Male Quartet will sail for New York on the *Colon*, December 13, as owing to future engagements in their trip around the world they cannot make connections on a later boat.

There were 85 entries in the Isthmian Thanksgiving Tournament. A great deal of enthusiasm was shown at various points along the line. Details are given in the notes of the various clubhouses below.

The standing of teams in the Isthmian Basket Ball League on December 2, was as follows:

Team.	Won.	Lost.	P. C.
Cristobal..........	8	0	1.000
Culebra............	5	3	.625
Gatun..............	5	3	.625
Gorgona............	4	4	.500
Empire.............	1	7	.125
Corozal............	1	7	.125

Results of games played on December 2, were as follows: Cristobal, 19; Gorgona, 16. Culebra, 21; Gatun, 18. Corozal, 37; Empire, 15.

Games to be played December 9, are: Empire at Gatun; Cristobal at Culebra.

COROZAL.

The MacWatters Male Quartet will give a program of quartets, solos, duets and impersonations on Friday evening, December 8.

The Gorgona Minstrel show held on November 28 was attended by an audience of 275.

The plans for additions to the Corozal clubhouse have been approved and the bowling alleys and other equipment ordered. It is expected that work on the building will be begun in January.

CULEBRA.

A correction for the previous week's record in the billiard tournament should read games lost in place of won, and won in place of lost, reversing the standing. The present standing follows:

Name	Won	Lost
Dubois..............	5	0
Tragsdorf...........	4	0
Hepler..............	5	0
Vogel...............	4	1
McCann..............	5	4
Conlon..............	3	3
Peters..............	4	3
Janneys.............	3	5
Byer................	2	6
Hertz...............	1	5
Thomson.............	3	5
Case................	0	6

Following are the Thanksgiving bowling scores:

Singles—Case, 556; Herrington, 490; Dougherty, 513; Driscoll, 440; Warner, 462; Cushing, 390.

Doubles—Herrington and Warner, 972; Cushing and Case, 954; Conlon and Dundas, 960; Dougherty and Driscoll, 933.

Two hundred people attended the entertainment on Thanksgiving evening. The following program was rendered: Piano solo, Arthur Howard; Mandolin solo, Mr. Ramsey; mixed quartet, Madams Brown and Kramer, Messrs. Case and Kramer; bass solo, Mr. Walsh; mixed quartet; indian club swinging, illuminated, Mr. Kramer; contralto solo, Mrs. Kramer; popular songs. Refreshments of home made cake and lemonade were served.

EMPIRE.

The total number of entries for the Thanksgiving bowling tournament was 38, 16 in the singles and 22 in the doubles. The followng made highest scores in singles and doubles: Singles—Gorham, 557; Parkis, 532; Pinney, 499; Pearson, 499. Doubles—Peterson and Scull, 1,050; Davis and Spinks, 1,020; Gorham and Gustavson, 995.

The sacred concert on Sunday night, December 3, by the MacWatters Quartet was attended by 350 people. A short talk was given by Mr. Oakes and the audience joined in a number of songs. A program of secular music well be rendered by the quartet on Tuesday, December 12.

On Wedensday, November 29, there was a meeting of the chess players and a committee was elected to arrange for a local chess tournament to start at once. Twelve names have been handed in for this tournament.

GORGONA.

Three-hundred and seventy five persons were present at the first performance of the Gorgona Minstrels on Monday, November 27. The show is booked for Camp Otis, December 8; Culebra, December 12; Cristobal, December 15; Gatun, December 19; and a return engagement in Gorgona, December 22.

Friday night, December 1, the MacWatters Male Quartet made their initial appearance on the Canal Zone. Fully 250 persons spent the evening as the audience of this group of entertainers.

The Sunday song service was made unusually popular by the presence of the MacWatters Quartet. Six sacred numbers were rendered by them. One hundred and seventy-nine persons were present.

GATUN.

"Open House" was observed at the clubhouse on Thanksgiving Day. As usual, pool, billiards and bowling were played without charge. In addition to a large number of the members there were many visitors from out of town who called at the clubhouse. In the evening a concert was given by the Tenth Infantry Regimental Band, assisted by vocal soloists. The attendance was 350.

Culebra won the basket ball game with Gatun on Saturday night, December 2. The score was 21 to 18. One hundred and twenty-five people attended.

The gymnasium class will meet on Wednesday night this week at 8 o'clock.

A few new members were added to the Choral Club which met Monday evening, December 4.

Gatun clubhouse expects to have William Jennings Bryan in a lecture in the latter part of December.

The results of the local bowling tournament held on November 30 are as follows: Doubles—Walters and Barte, 550; Dickson and DeMoll, 548; Teall and Wells, 546; DePoorter and Dalton, 543; Green and Wurster, 525. Singles—DePoorter, 287; Dalton, 284; Wurster, 283; Dickson, 276; Walters, 262; Severn, 258; Wells, 251; Green, 245, Teall, 244: Myers, 218.

A meeting of the Executive Council was held on Friday evening, December 1. Dan S . Clair was elected vice-chairman in place of R. M. Sands, resigned. There were present Messrs. Huber, Windes, Gayer, Shuck, Gamble, Sicean, and Secretary Smith. Reports of the activities of the clubhouse were given.

CRISTOBAL.

There was an attendance of 90 at the illustrated lecture on "California" given by E. G. Dauphine on Friday evening, December 1.

The next topic to be discussed by the Club on Christian Sociology, Monday evening, December 11, is, "Economic Causes of Tuberculosis." Leader, W. E. Burrell, Assistant Secretary.

The subject chosen for debate at the Debating Club's session to be held on Wednesday evening, December 13, is "Resolved that circumstantial evidence should have no weight in cases where capital punishment is involved." Messrs. Morrison and Cousineau, affirmative Messrs. Brown and DeLong, negative. All men are invited to attend.

The basket ball game Saturday night was won from Gorgona by a score of 19 to 16.

Rag-time tournaments in candle pins, duck pins and ten pins, were started on December 1, and will close December 31. The leaders on December 2, in each of these events were as follows: Candle pins—Louch and Schofield, 524. Duck pins—Bullard and Collins, 587. Ten pins—Gibson and Collins, 1,015. Prizes will be given to the teams making the highest scores in each of these tournaments. All members of the Cristobal Y. M. C. A. are invited to participate.

The members of the local bowling teams showed good results on Thanksgiving Day, and the following won prizes in the Isthmian championship ten pin tournament: A. M. Gibson, first in singles, 583, silver cup; D. F. Rabbitt and E. B. Thomas, first in doubles, 1,087, silver cups; H. A. Collins and J. W. Barrett, second in doubles, 1,065, gold medals; A. M. Gibson, high score for day, 240, silver medal; Val O'Shea, (class B) first, 420, box of cigars.

The following high scores were made on the local alleys for the week ending December 2: Duck pins—Smith, 107, 100; Barrett 113, 107, 103, 109; Vanderberg, 106, 107, 113; Farrel 100; Grover, 101; Collins, 105, 109; Marquez, 107; Louch, 104, 104; Cotton, M. 107; Bullard, 103, 103; Herrington, 105; Wheeler, 100, 113. Ten pins—Rabbitt, 203, 228, 207; Bullard, 224; Burns, T. 228; Barrett, 202, 208; Gibson, 240; Thomas, 207, Collins, 200, 210; Beattie, 208. Candle. pins—Louch, 105.

Sale at Public Auction.

There will be sold at Public Auction, by the District Quartermaster, at the old corral, Ancon, 2 p. m., Saturday, December 23, 1911, to the highest bidder, for cash, the following Isthmian Canal Commission property: Ten (10) mules, (American) and one (1) pony, (native). The Government reserves the right to accept or reject any or all bids. For further information, apply to District Quartermaster, Ancon, Canal Zone.
C. A. DEVOL, *Chief Quartermaster.*

LOST—Silver filigree Waterman fountain pen engraved with initials "W. V. L." Finder please communicate with Dr. William V. Levy, Tabernilla.

OFFICIAL CIRCULARS.

Rules Governing the Performance of Work by the Construction Divisions for the Department of Sanitation.

CULEBRA, C. Z., December 1, 1911.

CIRCULAR No. 183-F-3.

Effective this date, the following rules and regulations shall govern the performance of drainage and ditching work by the construction divisions for the Sanitary Department.

MAPS OF DRAINAGE SYSTEMS CARED FOR BY THE SANITARY DEPARTMENT.

1. Existing maps of sanitary drainage systems shall be extended so as to include all drains now cared for by the Department of Sanitation.

2. A uniform system of marking all sanitary ditches shown on the map shall be adopted, viz: The main ditches of any drainage system to be denoted by capital letters. Starting from the outlet of a main ditch and proceeding upstream, the ditches on the right shall be given even numbers, and those on the left odd numbers. For instance, on ditch system "A," the first ditch on the right starting upstream from the outlet of ditch "A" shall be marked "2," the first branch of ditch "2" shall be marked "4," the second branch "6," etc. If this ditch has only two branches, in returning to the main ditch "A" and proceeding along "A" upstream, the next ditch on the right would be marked "8," its first branch "10," etc. Where a ditch is to be installed between two existing branch ditches, as, for example, between ditches "5" and "7," such ditch shall be numbered "5-a," etc. Its first branch shall be numbered "5-b," etc., using small letters and not capitals.

3. As soon as a new ditch, ditching system, or permanent lining of a ditch has been completed in accordance with a request on Form (159-C. E.), the Division Engineer shall have same located on the map of sanitary drains. Also in case any ditch is filled up or abandoned the office of the Division Engineer shall have such fact indicated on the map.

4. When any ditch or section of ditch, is abandoned, such ditch as shown by map, shall be cross-hatched. The legend on the map shall show that such marking indicates an abandoned ditch.

5. Two blue-prints of sanitary drainage maps shall be furnished the District Sanitary Inspector. One copy shall be at all times available at the office of the District Sanitary Inspector.

6. When a new ditch has been completed or an old ditch abandoned, the District Sanitary Inspector will request the office of the Division Engineer to furnish him with a corrected blue-print (showing the addition or change). Upon receipt of same he will return to the Division Engineer the uncorrected map in his possession.

7. The Division Engineer will supply each District Sanitary Inspector with a list of all ditches in the sanitary district. Such list shall indicate the length of each ditch and the lengths of the respective branches thereof.

8. When a ditch is abandoned, the District Sanitary Inspector shall mark on such list the date when such ditch was abandoned. He shall also mark on the list the date of completion of newy installed ditches.

9. All maps of sanitary ditches shall contain a legend which will indicate the character of each ditch, showing whether it is an open drain, tile drain, or concrete-lined drain, etc.

MAINTENANCE OF DRAINS AND DITCHES.

10. Requests for maintenance of ditches shall be specific as to the character of work to be performed and shall be so worded as to leave no doubt whatsoever as to the nature or kind of work that it is desired to have accomplished.

11. District Sanitary Inspectors shall, as far as possible, keep the representative of the Division Engineer advised—by information in advance—as to what force of laborers will be required for maintenance of sanitary ditches, and shall confer with him at frequent intervals with the view of having the work performed as economically as is consistent with sanitary results to be obtained. It is desirable, as far as possible, to keep laborers on the job who know how to clean and maintain ditches, and who take an interest in such work. Laborers who are new to the work do not give as satisfactory and economical results as specially trained laborers do.

12. Maintenance of ditches shall be performed by a ditching gang. One such gang to be employed in each sanitary district.

13. The foreman of the ditching gang shall perform the work in a manner satisfactory to the District Sanitary Inspector, and carry out his instructions. In case the foreman does not carry on the work in a satisfactory and economical manner, it shall be the duty of the District Sanitary Inspector to notify the representative of the Division Engineer.

14. The District Sanitary Inspector shall inspect the work as it progresses and shall indicate to the foreman exactly what work is desired and the manner in which it shall be performed.

15. Ditches shall be swept with stiff brooms, when in the opinion of the District Sanitary Inspector such treatment is necessary for the removal of algæ, etc., and when the work request so specifies.

16. Ditching tools must be kept sharp and in proper shape. Stiff brooms for ditch cleaning and hoes shall be kept on hand in all sanitary districts.

17. The foreman of the ditching gang shall notify the District Sanitary Inspector the day before the ditching gang is to be moved to a new piece of maintenance work.

18. If emergency work prevents the ditching gang from being employed on ditching work, the representative of the Division Engineer will notify the District Sanitary Inspector to that effect.

(*a*) Established slopes of ditch banks and grade of bottom of ditches should not be changed unless such changes are specified in the work request.

(*b*) Obstructions and vegetation only should be removed.

(*c*) Ditches must not be deepened unless work request so specifies.

(*d*) Low places and holes should be filled.

(*e*) Dirt taken from ditches must not be piled so that it will be washed back into the ditch by the next rain.

(*f*) Dirt must be so placed that it will not prevent surface water from reaching the ditch.

(*g*) A clear space should be left at the sides of ditches so that the oiling gang can work freely.

(*h*) Clear all wet areas at sides of ditches and streams.

(*i*) Too much digging should not be done where filling is required.

(*j*) Banks that have a tendency to cave in or to be washed can often be advantageously protected by facing with available stone. Washouts should be filled with stone.

(*k*) Prevent the formation of holes or pockets.

(*l*) Small pockets must receive prompt attention.

(*m*) More satisfactory work can be accomplished if there is closer cooperation between the representative of the Division Engineer and the District Sanitary Inspector.

RULES AND INSTRUCTIONS REGARDING CONSTRUCTION WORK.—OPEN DITCHES AND EXCAVATION.

19. The slopes of sides of ditches and the grade of ditches shall so far as possible be made as shown on approved plans and profiles.

20. The material taken from any ditches being excavated shall be so placed that it can not wash back into the ditch and so that it will not cause pools of water to collect, or prevent surface water reaching the ditch.

21. In borrowing material for fills, care must be taken so that:

(*a*) The borrow pit will not hold rain water.

(*b*) Seepage water is not tapped by the excavation, thus causing new anopheles production areas to exist.

CONCRETE LINING FOR DITCHES.

22. Whenever seepage water outcrops near or at the sides of ditches, sufficient weep holes shall be built into the concrete lining. Such weep holes shall be located in the side walls only. They shall slope downward toward the surface of the ditch floor.

Key walls shall be used where necessary and when specified on approved plans. A weep hole shall be located in the concrete ditch wall, close to and on the upstream side of each key wall.

Whenever a pipe line crosses a ditch (and is in the plane of its cross-section, thus acting as an obstruction) the ditch shall be widened at such place before the concrete lining is installed.

23. Where possible, branch ditches shall enter the main ditch at an acute angle and the main ditch shall be made wider at such points.

24. On sharply curved sections of ditches, the outer wall shall be raised to prevent the water climbing over it.

25. At the junction of branch and main ditch the wall opposite outlet of branch shall be raised.

26. It shall be the duty of the Sanitary Inspector to list all necessary repairs to concrete ditches at the end of each rainy season, and have such work accomplished during the dry season, so far as possible.

TILE DRAINAGE.

27. The bottom of the trenches shall be true grade.

28. The tile shall be laid to a true alignment and wedged into place with small stones.

29. The trenches shall be no wider than absolutely essential and tile spades shall be used for this class of work.

30. The cover stone shall be properly packed above the tile.

31. The tile shall be laid with open joints, ⅛-inch to ¼-inch open space between consecutive lengths of tile, except in such material as requires close joints to avoid filling up the tile with washed-in material.

32. Where soft spots occur in the trench they shall be filled with broken stone well tamped, so as to produce a stable foundation before the tile is installed.

33. The cover stone shall completely fill the trench and extend slightly above the ground surface.

SPECIAL WORK.

For such work, either maintenance or construction, as requires special treatment and instructions the same should be prepared in writing by the Chief Sanitary Officer, or his authorized representative, and copies furnished to the District Sanitary Inspector and the proper representatives of the Division Engineer.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.

Acting Chief Sanitary Officer.

CULEBRA, C. Z., November 28, 1911.

CIRCULAR No. 422.

During the absence of Col. W. C. Gorgas, Chief Sanitary Officer, beginning November 28, 1911, Lieut.-Col. John L. Phillips is designated as Acting Chief Sanitary Officer.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Cost of Tools, Templets, Dies, Etc.

CULEBRA, C. Z., November 28, 1911.

CIRCULAR No. 264-B.

Circular No. 264-A, dated January 19, 1911, is hereby amended, effective December 1, 1911, so as to require the cost of all tools, templets, dies, fixtures, jigs, etc., to be charged to shop expense, with the single exception that the cost of tools, etc., of special character, that are made for use on work done for private individuals or companies, will be charged directly to the job.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Water Service and Electric Current for Church Buildings.

CULEBRA, C. Z., December 5, 1911.

CIRCULAR No. 423.

It is impracticable to approve hereafter any requests for free water service or for electric current without charge, to any churches or church buildings not owned by the Isthmian Canal Commission.

GEO W. GOETHALS,
Chairman and Chief Engineer.

Misdirected Letters.

ANCON, C. Z., December 4, 1911.

The following insufficiently addressed letters originating in the United States and its possessions have been received at the office of the Director of Posts and may be secured upon request of the addressees:

LETTERS UNCALLED FOR DECEMBER 4.

Agnew, Jos. H.
Baker, Fred M.
Battenfeld, Chas.
Bearup, Andrew H.
Bicknell, J. R.
Bowes, William H.
Bruno, J. A.
Carlson, C. R.
Cleyborn, Robert,
Coffey, M. E.. (2)
Collins, Ned,
Cornor, R. H.
Cottreu, Burtis
Cressey, Fred
Dueripel, James
Durant, B. W. (2d class)
Dwelle, Roy L.
Darby, Dr. Taylor (3d class)
Enor, Fred
Ford, Jonathan W.
Goldstein, Sard
Granham, Mrs. A.
Hastings, Mrs. Louis
Hart, Chas. F. (3d class)
Hershey, A. D.
Hester, Jack,
Hogg, Ambrose J.
Huttlemaier, Edw.
Higgins, Dr. Montgomery (3)
Koberly, Mrs.
Lewis, Lewis, H.
McCay, W. A. (3d class)
McCollum, C. S.
Mettke, E.
Painter, Pennell C. (2)
Patrick, Jack,
Paulman, Beulah
Petriken, M. C.
Ricard, R.
Rider, Philip
Rides, T. N.
Robertson, Mrs. Edd
Reardon, John (pkg.)
Schuartzenholzer, Mrs. Cord
Sbifilett, G. E.
Spinks, James M.
Turner, Mrs. C.
Verner, Rev. J. P.
Wahlquist, Oscar

LETTERS UNCALLED FOR NOVEMBER 27.

American Express Co.
Barnett, J. C.
Bryan, Miss W.
Burton, John Lee (2)
Cristobal, A. M.
Delavan, Geo.
Huber, R.
Jones, Miss Virginia
Jones, W. A.
Lewis, Robert
Luther, Joseph
McIntyre, Martin
Ross, W. A.
Savage, James
Seoane, Jose Maria (2)
Seybold, Geo. E.
Skinner, V. H.
Slumm, Dr. H. W.
Stewart, William
Tyson, Wilbert
Warnock, F. N.
Wieshofer, J.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Hotel Tivoli, Ancon, C. Z., Sunday, December 10, 1911, at 7.30 p. m. The program follows:

1. March—*Inspector General*............... Losey
2. Selection—*Naughty Marietta*.......... Herbert
3. Waltz—*Farewell to Munich*............. Gung'l
4. Overture—*Jeanne Maillotte*............ Reynaud
5. (*a*) Medley March—*Stop, Stop, Stop*...... Berlin
   (*b*) Cake Walk—*A Coon Band Contest*..... Pryor
6. Duet for Cornets—*Bolero*................ Hall
   Messrs. Bernell and Sanmartin.
7. Intermezzo—*Gretchen*.................. Martin.
8. Medley Selection—*Sterns' American-European Hits*.......... Williams
9. March—*Up the Street*.................. Morse

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Culebra, on December 17, at 5.45 p. m.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning December 2, 1911.

FRESH MEATS.

	Price.
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	20
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24

MISCELLANEOUS.

Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Veal, per pound	1.20
Beef, per pound	25
Eggs, fresh, dozen	†39
one-half dozen only	†20
Bluefish, fresh, per pound	14
Halibut, fresh, per pound	15
Oysters, 1 qt. kegs, per keg	50

POULTRY AND GAME.

Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each 60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.00
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	28
Squabs, each	35
Capons. each	2.10
Partridges, each	50
Grouse, each	50

CURED AND PICKLED MEATS.

Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30

DAIRY PRODUCTS.

Butter—Creamery special, per pound	†39
Cheese—Roquefort, per pound	45
Philadelphia cream, cake	10
Young America, per pound	20
Swiss, per pound	26
Edam, each	1.00
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**25
Buttermilk, bottle	**15
Fer-mil-lac, bottle	**25

	Price.
Ice cream, quart	‡25
½-gallon	‡50

VEGETABLES AND FRUITS.

Beets, per pound	3
Celery, per head	6
Cabbage, per pound	4
Cucumbers, per pound	12
Carrots, per pound	3
Cauliflower, per pound	7
Egg Plant, per pound	10
Lettuce, per pound	*12
Onions, per pound	3½
Pumpkin, per pound	3
Potatoes, white, per pound	3½
sweet, per pound	2
Parsnips, per pound	4
Parsley, per pound	10
Squash, per pound	3
Turnips, per pound	3
Yams, per pound	3
Apples, per pound	5
Cranberries, per pound	9
Grapes, per pound	10
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12
Peaches, pound	12
Plums, per pound	10
Pears, per pound	10

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the two weeks ending December 2:

Advance, November 19, from New York, with 42 kegs bolts, for Atlantic Division; 84 kegs bolts, 140 kegs bolts, 114 barrels leadite, for Pacific Division; 12,000 pieces vitrified conduit, for Atlantic Division; 36 pieces locomotive tires, for Mechanical Division; 50 pieces steel beams, 6,500 pieces building tile, for Panama Railroad Company; 42 crates galvanized pails, 60 kits shellac, 17 bales excelsior, 7 drums zinc, 100 cases candles, 50 bundles pipe fittings, 100 kegs boat spikes, 150 bundles wire, 49 cases window glass, 56 pieces steel plates, 13 barrels lead bends, 21 bundles handles, 10 cases rubber hose, 420 bundles shovels, 600 rolls roofing paper, 14 cases scythe stones, for stock; and a miscellaneous cargo, the whole consisting of 20,811 packages, weighing 400 tons.

San Jose, November 21, from San Francisco, with 14 bales dredging sleeves, for Atlantic Division.

Lewis Luckenbach, November 21, from Philadelphia, with 49 barrels ammonia alum, 239 barrels sulphate alumina, 10 cases neatsfoot oil, for stock.

Cuzco, November 23, from Tacoma, with 4,000 sacks oats, 9,612 pieces Douglas fir lumber, for stock; 12 pieces spud timbers, 19 pieces dipper handle timbers, for Atlantic Division.

Turrialba, November 23, from New Orleans, with 150 bags dairy feed, 16 bags wheat, 35 pieces piling, 4,252 pieces yellow pine lumber, for stock; 404 pieces yellow pine lumber, for Atlantic Division; 4,009 pieces yellow pine lumber, for Mechanical Division; 1,147 pieces creosoted ties, for Panama Railroad Company; 30 packages castings, for Pacific Division.

Almirante, November 23, from New York, with 100 cases toilet paper, 200 cases turpentine, 10 cases steel files, 12 cases carbon paper, for stock.

Eastlands, November 23, from Gulfport, with 533 pieces untreated piling, for Atlantic Division; 969 pieces untreated piling, for stock.

Panama, November 24, from New York, with 46,283 pieces vitrified duct, 12 barrels electrical material, for Atlantic Division; 12 pieces steel plates, for Pacific Division; 2,000 pieces building tile, for Panama Railroad Company; 16 cases fire bricks, 48 bundles car wheels, 30 cases brake shoes, 774 bundles castings, for Mechanical Division; 8,000 pieces building tile, 10 cases rubber hose, 34 pieces railroad frogs, 105 bundles switches, 20 reels wire rope, 103 pieces steel plates, 500 pieces iron pipe, 179 bundles galvanized sheets, 75 cases caustic soda, 340 barrels screw spikes, 60 cases metal polish, 15 cases insulated wire, 207 bales brooms, 120 bundles wire, 50 cases Ivory soap, 36 cases mower parts, 10 bags hulled oats, 492 rolls roofing paper, 45 cases japan dryer, 200 kegs red lead, 160 bundles roofing iron; and a miscellaneous cargo, the whole consisting of 60,126 packages, weighing 765 tons.

Pennsylvania, November 27, from San Francisco, with 9 bales rubber hose, for Atlantic Division; 8 bundles stove elbows, for stock.

Ancon, November 30, from New York, with 121,156 bags cement, for Atlantic and Pacific Divisions.

Heredia, November 30, from New Orleans, with 460 pieces C. I. pipe, 44 rolls cotton duck, 6 cases hardware, 7,358 pieces lumber, 95 pieces piling, for stock; 35 pieces piling, 88 bundles steel plates, 110 bundles washers, 66 pieces brackets, for Atlantic Division; 2,443 pieces lumber, for Mechanical Division; 790 pieces creosoted ties, for Panama Railroad Company.

Santa Marta, November 30, from New York, with 10 cases linoleum, 99 kegs boat spikes, for stock.

Maude, December 1, from New York, with 94,013 bags cement, for Atlantic and Pacific Divisions.

Allianca, December 1, from New York, with 8 barrels chain, for Pacific Division; 430 pieces castings, 45 bundles castings, for Mechanical Division; 30 cases cartridges, for Department of Civil Administration; 80 cases acid, 21 cases drugs, for Sanitary Department; 17 bundles baskets, 43 cases wrenches, 10 cases oil, 20 coils rope, 150 cases varnish, 10 cases electric material, 10 cases pipe fittings, 116 pigs lead, 75 cases soap, 180 pieces switches, 747 pieces iron pipe, 10 reels wire rope, 163 cases soda, 9 cases machinery, 13 cases brushes, 11 cases waste, 38 barrels rosin, 17 cases washers, 15 cases stationery, for stock; and a miscellaneous cargo, the whole consisting of 3,430 packages, weighing 320 tons.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Colon	P. R. R.	Friday	Dec.	1
Advance	P. R. R.	Thursday	Dec.	7
Panama	P. R. R.	Thursday	Dec.	14
Allianca	P. R. R.	Wednesday	Dec.	20
Colon	P. R. R.	Wednesday	Dec.	27
Advance	P. R. R.	Tuesday	Jan.	2
Panama	P. R. R.	Tuesday	Jan.	9
Allianca	P. R. R.	Monday	Jan.	15
Colon	P. R. R.	Monday	Jan.	22
Advance	P. R. R.	Saturday	Jan.	27

CRISTOBAL TO NEW YORK.

Allianca	P. R. R.	Thursday	Dec.	7
Colon	P. R. R.	Wednesday	Dec.	13
Advance	P. R. R.	Wednesday	Dec.	20
Panama	P. R. R.	Wednesday	Dec.	27
Allianca	P. R. R.	Tuesday	Jan.	2
Colon	P. R. R.	Tuesday	Jan.	9
Advance	P. R. R.	Monday	Jan.	15
Panama	P. R. R.	Sunday	Jan.	21
Allianca	P. R. R.	Sunday	Jan.	28
Colon	P. R. R.	Saturday	Feb.	3

NEW YORK TO COLON.

Metapan	U. F. C.	Thursday	Nov.	30
Prinz August Wilhelm	H.-A.	Saturday	Dec.	2
Zacapa	U. F. C.	Thursday	Dec.	7
Prinz Eitel Friedrich	H.-A.	Friday	Dec	8
Magdalena	R. M.	Saturday	Dec.	9
Almirante	U. F. C.	Thursday	Dec.	14
Prinz Joachim	H.-A.	Saturday	Dec.	16
Santa Marta	U. F. C.	Thursday	Dec.	21
Prinz Sigismund	H.-A.	Friday	Dec.	22
Clyde	R. M.	Saturday	Dec.	23
Metapan	U. F. C.	Thursday	Dec.	28
Prinz August Wilhelm	H.-A.	Saturday	Dec.	30
Prinz Eitel Friedrich	H.-A.	Friday	Jan.	5
Prinz Joachim	H.-A.	Saturday	Jan.	13

COLON TO NEW YORK.

Santa Marta	U. F. C.	Thursday	Dec.	7
Prinz Sigismund	H.-A.	Saturday	Dec.	9
Clyde	R. M.	Tuesday	Dec.	12
Metapan	U. F. C.	Thursday	Dec.	14
Prinz August Wilhelm	H.-A.	Tuesday	Dec.	19
Zacapa	U. F. C.	Thursday	Dec.	21
Prinz Eitel Friedrich	H.-A.	Saturday	Dec.	23
Thames	R. M.	Tuesday	Dec.	26
Almirante	U. F. C.	Thursday	Dec.	28
Prinz Joachim	H.-A.	Tuesday	Jan.	2
Santa Marta	U. F. C.	Thursday	Jan.	4
Prinz Sigismund	H.-A.	Saturday	Jan.	6
Metapan	U. F. C.	Thursday	Jan.	11

NEW ORLEANS TO COLON.

Atenas	U. F. C.	Saturday	Dec.	2
Parismina	U. F. C.	Wednesday	Dec.	6
Turrialba	U. F. C.	Saturday	Dec.	9
Cartago	U. F. C.	Wednesday	Dec.	13
Abangarez	U. F. C.	Saturday	Dec.	16
Heredia	U. F. C.	Wednesday	Dec.	20
Atenas	U. F. C.	Saturday	Dec.	23
Parismina	U. F. C.	Wednesday	Dec.	27

COLON TO NEW ORLEANS.

Heredia	U. F. C.	Thursday	Dec.	7
Abangarez	U. F. C.	Thursday	Dec.	7
Atenas	U. F. C.	Thursday	Dec.	14
Parismina	U. F. C.	Thursday	Dec.	14
Turrialba	U. F. C.	Thursday	Dec.	21
Cartago	U. F. C.	Thursday	Dec.	21
Abangarez	U. F. C.	Thursday	Dec.	28
Heredia	U. F. C.	Thursday	Dec.	28

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, DECEMBER 13, 1911. No. 16.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Construction Bridge Over Gatun Locks.

Plans are in preparation for a temporary railroad bridge over the locks at Gatun for the purpose of giving access to the dam, after the water in the lake has risen and covered the location of the present tracks that join the main line of the railroad with the system of tracks on the toes of the dam. Incidentally the new bridge will make it convenient to abandon the Mindi spur track by which the dam is connected with the main line on the north end. This track crosses the Canal and if kept in commission would hinder dredging between Gatun Locks and the Atlantic entrance.

Canal Work in November.

The grand total of Canal excavation to December 1 was 155,653,664 cubic yards, leaving to be excavated 39,669,715 cubic yards, or about one-fifth of the entire amount for the completed Canal.

The total for November was 2,599,922 cubic yards, as compared with 3,006,037 cubic yards in November, 1910, and 2,458,152 cubic yards in November, 1909.

The dry excavation amounted to 1,392,437 cubic yards, and was principally by steam shovels. The dredges removed 1,155,860 cubic yards, and 2,960 cubic yards were sluiced in the Central Division, and 50,563 cubic yards in the Pacific Division, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 796,961 cubic yards. Of this total, 54,719 cubic yards were dry excavation, and the remainder was removed by dredges in the Atlantic entrance.

The total excavation in the Central Division was 1,221,746 cubic yards, all of which was from the prism. The amount taken from Culebra Cut was 1,209,498 cubic yards, as compared with 1,209,554 cubic yards in November, 1910.

In the Pacific Division, the total excavation was 581,215 cubic yards, 413,618 cubic yards of which were taken out by dredging at the Pacific entrance, and 50,563 cubic yards by the hydraulic plant below Miraflores Locks.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

LOCALITY.	"Work." Excavation.	"Plant." Excavation.	Total excavation.
ATLANTIC DIVISION.			
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Dry excavation—			
Locks, Dam and Spillway..................	....	....	....
Mindi.....................	54,719	....	54,719
Total..................	54,719	....	54,719
Wet excavation—			
Atlantic entrance	742,242	....	742,242
Locks, Dam and Spillway..............	....	....	....
Total................	742,242	....	742 242
Total wet and dry excavation.........	796,961	....	796,961
CENTRAL DIVISION.			
Dry excavation—			
Culebra Cut............	1,209,498	....	1,209,498
Chagres section.......	9,288	....	....
Wet excavation—			
Chagres section........	2,960	....	12,248
Total................	1,221,746	....	1,221,746
PACIFIC DIVISION.			
Dry excavation—			
Locks, Dams and Spillways..............	97,856	....	97,856
Diversions.............	....	....	....
Prism, south of Pedro Miguel Locks........	19,178	....	19,178
Total..................	117,034	....	117 034
Wet excavation—			
Pacific entrance	462,283	1,898	464,181
Miraflores Locks......	....	....	....
Inner Harbor	....	....	....
Total................	462,283	1,898	464,181
Total wet and dry excavation.........	579,317	1,898	581,215
TOTAL CANAL EXCAVATION.			
Dry excavation	1,390,539	1,898	1,392,437
Wet excavation	1,207,485	....	1,207,485
Total....	2 598 024	1,898	2,599,922

Mean rainfall along Canal (eleven stations), 11.92 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc.; that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks.	43,907	61,348	105,255
Concrete laid in dams and spillways.......	2,417	....	2,417
Fill placed in dams ..	473,760	49,760	523,520

Test of Sun Valves.

The work of installing temporary acetylene lights in the two reinforced concrete towers which form Range No. 9-11 in the Pacific Division will be begun this week, and it is expected that the lights will be in operation within a few days.

In connection with this installation it is proposed to test a patent sun valve, which is said to reduce very considerably the consumption of gas. The valve operates upon the principle of a copper cylinder expanding when light falls upon the apparatus, closing a valve, and thus shutting off the flow of gas to the burner. A small pilot flame is left burning. When the light rays are shut off from the apparatus the cylinder contracts, the valve is opened by means of a spring and the gas is allowed to flow into the valve chamber whence it passes out to the burner. Thus during clear weather the main supply of gas will be automatically shut off for about ten hours during the day.

Should the test of the sun valve prove successful its adoption will materially reduce the initial cost of installation, in addition to the constant saving in the consumption of gas.

The naked flame of the lights in this range will be about 20 candle power, which when projected through a locomotive type of headlight will produce about 4,000 candle power.

Culebra Cut.

Work will be begun next week on an incline leading from Culebra Cut to the main line of the Panama railroad at Bas Obispo, in order that there may be a means of hauling out the small amount of spoil remaining after the inclines at both the north and south ends of the Cut have been excavated. The present inclines, that recently completed and now in use opposite Bas Obispo, and that just commenced at the south end near Pedro Miguel, are partly within the canal prism, and will have to be excavated as the work nears completion, but the new incline on the west side at Bas Obispo will be entirely without the prism. It will have a grade of four per cent.

The double track incline on the east side at Bas Obispo has been in use a week. It has a maximum grade of 2 per cent and three locomotives are required to handle a train of 21 nineteen yard cars up the incline. On the south end the incline has a one per cent grade and two locomotives are required.

At the beginning of December there had been excavated from Culebra Cut 72,151,742 cubic yards of material, and there remained to be excavated 17,292,263 cubic yards.

In order to relieve the pressure on the slide just north of the Central Division offices, on the west side of Culebra Cut at Empire, the crest of the bank just above the slide was blown off on December 9. Seven hundred pounds of dynamite, distributed among twenty-eight 24-foot holes, were exploded simultaneously. It is believed that this "broke the back" of the slide. A short time previous it was necessary to remove from the

NOTES OF PROGRESS.

(*Continued.*)

area threatened by the slide a 4,000-gallon and a 1,000-gallon oil tank. The earth on which they stood is now slipping into the Cut.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 72 per cent completed, 164,185 cubic yards, out of a total of 225,000. having been placed at the close of work on December 9. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
December 3	124		
December 4	134	8.00	2
December 5	48	2.00	1
December 6	160	8.00	2
December 7	160	8 00	1
December 8	124	7 00	1
December 9	142	8 00	1
Total	892	41.00	1.3
Previously reported	163,293		
Grand total	164,185		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending December 9, follows:

DATE.	Hours worked.	Cubic Yards.
December 4	3.17	1,533
December 5	3.14	1,500
December 6	3.08	1,559
December 7	3.18	1,588
December 8	3.33	1,635
December 9	3.37	1,673
Total	20.07	9,488

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending December 9, follows:

DATE.	Hours worked.	Cubic Yards.
December 4	7.55	3,477
December 5	7.25	2,768
December 6	7.25	2,939
December 7	8.10	3,320
December 8	7.30	2,946
December 9	8.25	2,943
Total	46.50	18,393

Chain Fender Machines.

Award has been authorized for 48 machines, for lifting and lowering the fender chains in the locks, to the United Engineering and Foundry Company for $428,005, the lowest of ten bids received. The next lowest bid was $490,226.87 and the others varied between this and $819,800, the highest. The first or sample machine is to be delivered within 120 days from the date of award, and if it proves satisfactory, the full award of 47 more machines will be made. The deliveries on the final award are within 210 days at Gatun, 240 days days at Pedro Miguel, and 300 days at Miraflores.

The contract includes, besides the machine to lift and lower the chains, castings for hawse pipes, structural materials, operating valves, piping and fittings, and mechanism for starting and stopping the pumps. It does not include the main pumps and motors, electrical machinery and wiring, the fender chains themselves, suction tanks, resistance valves, stairways and gratings, drainage pumps and motors, and riveted steel anchorages for attaching to hawse pipe castings.

An article descriptive of the fender chains was published in THE CANAL RECORD of October 4, 1911. The function of these fenders is to prevent the lock gates from being rammed by a ship that may approach too near under its own steam, or by escaping from the towing locomotives.

Members of the Illinois Manufacturers' Association and their friends, forming a party of about two hundred persons, will spend two days on the Isthmus in January.

CONCRETE WORK IN THE LOCKS.

Over 73 per cent of the concrete for the locks is in place, the amount at the close of work on December 9. being 3,077,366½ cubic yards, out of a total of approximately 4,199,400. A total of 25,890½ cubic yards of concrete was laid in the locks during the week ending December 9.

GATUN LOCKS.

Over 86 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on December 9 being 1,735,797½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending December 9, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
December 4	1.242	21.54	6	414	4.40	2	8	1,707
December 5	806	13 16	6	330	3.40	2	16	1,197½
December 6	1.150	18 28	4	472	5.40	2	48	1,661
December 7	1,542	25.18	5	458	5.30	2	8	2.086½
December 8	1,266	20 32	6	316	3.40	2	....	1,677½
December 9	1,320	22.14	6	390	4.40	2	....	1,783
*Portable mixers	....	....	......	326.5	....	......	....	
Total	7,326	121.52	55	1,996½	27.50	2	80	10,112½
Previously reported	....	....	......	....	....	......	....	1,725,685
Grand total	....	....	......	....	....	......	....	1,735,797½

The 326½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days; December 4th, 51; December 5th, 53½; December 6th, 23; December 7th, 38½; December 8th, 87½ December 9th, 73.

PEDRO MIGUEL LOCK.

Concrete work in the locks at Pedro Miguel is over 93 per cent completed, 780,964 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on December 9. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
December 4	470	13.50	3	108	10.50	3	....	578
December 5	442	13.00	3	197	7.50	2	....	639
December 6	442	13.00	3	197	14.50	2	....	639
December 7	442	14.00	3	95	7.00	1	....	537
December 8	528	16.00	3	110	8.50	2	....	638
December 9	352	10.50	3	66	6.00	2	....	418
Totals	2,676	80.00	3	773	54.00	2	....	3,449
Previously reported	....	....	......	....	....	......	4,423	777,515
Grand totals	....	....	......	....	....	......	4,423	780,964

MIRAFLORES LOCKS.

Over 41 per cent of the concrete for the system of two twin locks at Miraflores was in place on December 9, the total amount on that date being 560,875 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Dec. 4	1,244	44.00	7	630	9.90	2	230	19.00	3	....	2,104
Dec. 5	1,626	42.80	7	484	6.80	2	229	21.50	3	....	2,339
Dec. 6	1,320	47.67	7	598	8.70	2	211	15.50	3	....	2,129
Dec. 7	1,038	29.25	7	668	9.60	2	204	15.00	3	....	1,910
Dec. 8	732	30.50	7	500	7.20	2	223	18.00	3	....	1,455
Dec. 9	1,822	44.15	6	414	6.20	1	156	11.00	3	....	2,392
Totals	7,782	238.37	6.83	3,294	48.40	1.83	1,253	100.00	3	....	12,329
Previously reported	....	....	......	....	....	......	....	....	......	3,693	548,546
Grand totals	....	....	......	....	....	......	....	....	......	3,693	560,875

NAOS ISLAND BREAKWATER.

Effect of Dumping Dredged Rock—Work on Double Trestle Begun.

During the low tide of December 7 an examination was made of the Naos Island breakwater at the Pacific entrance to the Canal, especially of that section between the end of the present trestle and the island. In this section the Pacific Division has been dumping rock from the dredging at Balboa since November 1. It was found that through this dumping a fill had been made about 800 feet long, 200 feet wide at the base, and from one to eight feet above water at extreme low tide, and that this extended from the end of the trestle to the shoal water near the island, there being left only one deep place on the line of the breakwater.

The driving of piles for the double trestle has been begun. It will be made upon the fill mentioned above, and it is believed that less trouble will be experienced in making it stand, since the base of the fill is heavy and broad. The Pacific Division scows dumped 38,000 cubic yards of rock on the line of the breakwater in November, and during the present month this filling is continuing at the rate of from 2,000 to 2,500 cubic yards a day.

It has been decided to change the direction of the breakwater slightly as it approaches the island so that it will connect with the island at the eastern extremity of its north end. This will be done in order that a site for a permanent dock at the north end of the island may be left. The site for the new dock may be reached by small boats without being exposed to rough weather or the fire of an enemy, and there is a natural channel 15 feet deep at mean tide leading from the Canal which can be dredged economically to greater depth, because the material is soft.

Air Compressors for Miraflores.

The work in Culebra Cut north of Las Cascadas has reached such a point that less compressed air is now required, while the pressure at Miraflores Locks has been too low for the efficient operation of rock drills. On this account a battery of two air compressors with their boilers will be moved from the Las Cascadas plant and installed at Auga Dulce at the south end of the Miraflores Lock site.

The compressor to be moved first will be installed at the Agua Dulce pumping plant, and for the present the boilers now at the plant will supply steam. An 8-inch main will be laid at once northward along the west side of the lock site to connect with the present 7-inch air main from the Rio Grande Compressor. There will be outlet tees at 500 foot intervals. An investigation is now under way to determine whether the boilers in the Las Cascadas plant can be safely worked at 150 pounds pressure per square inch, and if they can be then only two of them will be transferred to the new compressor site. If they cannot be so worked then three will be transferred. After the boilers are moved, the second compressor will be transferred, and then a 6-inch main will be laid southward from the pumping station to the dike which has been thrown across the channel to permit of dry excavation, after the section of the canal just south of the locks has been dredged by the hydraulic suction method.

The smoke stack, feed water pumps, and oil tanks now installed at the Agua Dulce pumping station are of sufficient capacity for the compressors and three extra boilers. Two compressors will be sufficient at Miraflores until the hydraulic excavation is completed. A third may be necessary when the drilling for dry excavation is begun, but by that time the excavation work in Culebra Cut north of Empire will be still further reduced, and the transfer of one or two of the remaining compressors at Las Cascadas and the necessary boilers will then be considered.

Springs for Approach Wall Fenders.

The award has been authorized to the Railway Steel Spring Company of a contract for furnishing helical springs for use in the fenders for the lock approach walls. Eight bids were received, and the lowest for 53 cents a spring, total of $13,572.24, was accepted. The total number of springs contracted for is 25,608 and their total weight, 640,200 pounds. Each spring must be 12¼ inches long when free, 9¼ inches when loaded, 3 1/16 inches inside diameter. The free height must not vary more than ⅛ of an inch from the height specified. An article descriptive of the fenders for which these springs are purchased was published in THE CANAL RECORD of October 11, 1911.

Family Quarters.

Applications for married quarters were on file on December 1, as follows:

DISTRICT.	List No 1.	List No. 2.
Ancon	7 (4)	53 (15)
Ancon Hospital	1	7 (2)
Balboa	....	31 (7)
Bas Obispo	....	26 (3)
Corozal	1 (1)	48 (6)
Cristobal	1 (1)	125 (7)
Culebra	....	45 (3)
Empire	1	74 (27)
Gatun	....	128 (44)
Gorgona	....	78 (33)
Las Cascadas	1	22
Pedro Miguel	2	40 (14)
Porto Bello	1 (1)	12 (10)
Toro Point	....	5 (2)
Totals	15 (7)	694 (173)

NOTE—The figures in parenthesis show the number of applicants already occupying regular or nonhousekeeping family quarters at stations other than those at which applications are filed.

LABOR FORCE AND QUARTERS IN NOVEMBER.

The total force at work on the Canal and Railroad on November 29, was 37,590, as compared with 37,260 at the end of October, 1911; with 35,641 in November, 1910, and 33,808 in November, 1909. Canal employes numbered 29,783 and railroad employes 7,807. The number of "gold" or white American employes in the Canal force, was 4,279, compared with 4,229 in October, 1911, and with 4,646 in November, 1910. The force report for November 29, follows:

DEPARTMENT.	SILVER EMPLOYES.*															
	Artisans.						European Laborers.		West Indian Laborers.					Total Silver.	Total Gold.	Grand Total.
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20cents.	16cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Const'ct'n and Eng'r'ng	4,330	12	18	228	713	2,791	4,048	585	126	589	4,365	2,917	266	20,988	3,186	24,174
Civil Administration	187	..	..	2	3	26	......	......	...	.....	......	13	....	231	367	598
Sanitation	674	..	..	3	3	3	......	2	..	2	4	357	3	1,051	350	1,401
Quartermaster's	921	.	1	154	168	120	152	4	26	1	106	916	†10	2,579	203	2,782
Subsistence	640	..	..	2	.....	1	......	......	...	.....	......	......	....	643	52	695
Disbursements	7	..	..	....	....	......	......	......	...	.....	......	......	....	7	24	31
Examination of Accounts	5	..	..	....	....	......	......	......	...	.....	......	......	....	5	97	102
Total	6,764	12	19	389	887	2,941	4,200	591	152	592	4,475	4,203	274	25,504	4,279	29,783
Month previous	6,753	14	16	351	826	2,893	4,316	565	128	467	4,178	4,132	259	24,905	4,291	29,196

Panama railroad force, 4,165; Panama railroad relocation force, 2,512; Panama railroad commissary force, 1,130 Total, 7,807 I. C. C. force, 29,783 Grand total, 37,590.

*All wages specified are in gold.

†Includes 5 at 5 cents.

The employes in the Department of Construction and Engineering on November 29, were distributed as follows:

DIVISION.	SILVER EMPLOYES.*															
	Artisans.						European Laborers.		West Indian Laborers.					Total Silver.	Total Gold.	Grand Total.
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Chief Engineer	74	..	..	12	17	34	4	22	16	89	120	63	4	455	171	626
Mechanical	212	5	2	26	51	416	64	.....	...	.....	789	20	10	1,595	716	2,311
Atlantic	1,803	5	13	92	339	1,077	1,271	322	...	83	997	398	36	6,436	844	7,280
Central	1,116	2	..	28	110	468	1,908	68	91	417	971	2,192	156	7,527	787	8,314
Pacific	1,125	..	3	70	196	796	801	173	19	.....	1,488	244	60	4,975	668	5,643
Total	4,330	12	18	228	713	2,791	4,048	585	126	589	4,365	2,917	266	20,988	3,186	24,174
Month previous	4,296	14	15	230	675	2,713	4,160	560	104	467	4,029	2,855	246	20,391	3,192	23,586

*All wages specified are in gold.

QUARTERS.

On December 1, there were 25,132 occupants of Commission quarters. Of these, 9,267 were white Americans, of whom 5,244 were men, 2,077 were women, and 1,946 were children. There were 5,912 Europeans of the laborer class, of whom 5,249 were men, 277 women, and 386 children. There were 9,953 West Indian negroes, of whom 7,617 were men, 1,043 women, and 1,293 children. Included in the above were 149 Asiatics, and 113 Panamans.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M'THS.	Culebra Section.*								Chagres Section.**				
	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
Jan.....	....	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	....	169,447	389,399	175,802	255,385
Feb.....	....	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	....	200,145	450,182	286,309	219,550
March	....	132,840	239,178	815,270	1,290,885	1,434,597	1,509,728	1,728,748	... ..	324,233	619,491	484,846	297,339
April..	....	126,749	213,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	....	329,483	510,020	428,777	102,103
May....	27,556	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	....	235,902	386,170	248,974	29,783
June...	32,551	76,905	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	....	322,145	275,900	164,389	32,288
July...	31,599	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	....	345,757	233,897	166,106	22,284
August	35,056	49,210	244,823	786,866	1,171,927	1,173,370	1,377,714	1,442,402	2,900	368,683	231,543	234,404	21,892
Sept...	25,220	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	1,340,173	21,546	346,948	235,818	234,290	21,272
Oct....	19,695	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	1,306,971	25,627	424,911	221,409	271,409	12,216
Nov....	28,860	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	44,044	336,390	93,619	260,882	12,248
Dec....	42,935	70,630	307,689	1,025,485	1,210,046	1,152,022	1,211,400	....	98,652	383,948	105,044	197,481	....
Totals.	243,472	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	15,245,809	192,769	3,787,992	3,752,492	3,153,669	1,026,360

ATLANTIC DIVISION.

Months.	Colon (Mindi)†		Gatun Locks, Dam and Spillway.††			
	1909.	1911.	1908.	1909.	1910.	1911.
January...	45,664	....	292,155	102,690	125,011	65,889
February.	46,046	47,102	282,797	95,031	123,738	50,511
March....	70,713	49,734	374,598	90,051	132,007	51,431
April.....	74,368	74,030	373,456	70,009	103,243	12,548
May.......	71,407	64,482	266,747	52,786	82,958	17,677
June......	80,101	59,157	244,951	36,556	88,088	4,840
July.......	82,378	58,125	213,359	39 058	95,503	6 897
August...	66,249	65,041	188,262	40,346	99,737	22 558
Sept'mber	61,437	74 487	145,990	49,945	103,040	3,489
October...	72,643	65,919	154,064	57,321	118,327	112
November	42,009	54,719	118,278	63,452	94,552	....
December	....	....	119,904	96,590	72,030	....
Totals..	713,015	612,796	2,774,561	793,835	1,238,234	235,952

PACIFIC DIVISION.¶

Months.	Pedro Miguel Locks ‡				Miraflores Locks, Dams and Spillway.‡‡			
	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1911.
January	....	83,726	27,320	15,690	7,203	61,202	31,479	48 744
February	....	58,242	9,486	6,809	39,046	53,689	15,300	12,936
March	....	95,624	6,784	674	73,194	51,417	18,184	72,739
April	....	101,365	9,129	255	98,943	60,060	12,148	79,751
May	....	57,523	10,405	5,905	73,023	47,588	20,250	57,975
June	13,228	70,971	8,420	7,454	68,691	55,653	21,994	38,023
July	22,648	77,503	4,410	6,273	104,369	50,999	11,990	97,884
August	22,217	58,025	12,789	220	94,248	35,446	17,548	102,249
Sept'mber	28,833	48,825	10,405	3,472	90,923	31,803	8,590	96,112
October	48,875	39,002	7,433	5,365	74,700	25,349	9,850	107,790
November	55,401	20,207	10,636	12,962	52,930	18,644	9,400	84,894
December	65,578	28,342	11,195	....	69,650	20,083	17,906	....
Totals	256,780	739,355	128,412	65,079	846,920	511,933	194,639	799,097

*Total to December 1, 1911, 72,151 742 cubic yards.

**Total to December 1, 1911, 11,913,282 cubic yards, of which 184,911 cubic yards were removed by sluicing.

†Total to December 1, 1911, 2,089,617 cubic yards; in this total are included 172,851 cubic yards removed in 1907, and 590,955 cubic yards removed in 1908.

††Total to December 1, 1911, 6,409,389 cubic yards; in this total are included 26,628 cubic yards excavated October to December, 1906, and 1,340,179 cubic yards in 1907.

‡Total to December 1, 1911, 1,189,626 cubic yards.

‡‡Total to December 1, 1911, 2 352,589 cubic yards.

¶There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 615,099 cubic yards at different points in prism to Dec. 1, 1911. There were also 172 cubic yards removed by steam shovels outside of prism during October, 1908.

WET EXCAVATION.

ATLANTIC DIVISION.

Months.	Atlantic Entrance.§					Gatun Locks †	
	1907.	1908.	1909.	1910.	1911.	1908.	1909.
Jan..	111,100	490,701	521,050	510,055	520,181	......	97,043
Feb..	110,002	427,722	444,910	493,448	455,318	......	132,291
Mar..	84,145	546,886	461,208	412,325	391,736	......	141,838
April	69,889	496,366	470,635	190,574	492,579	.....	17,938
May .	133,847	564,386	315,370	447,578	514,178	.....	52,011
June.	124,118	572,749	182,575	458,021	452,098	......	38,829
July..	109,922	625,497	348,451	423,092	425,195	......	....
Aug..	194,297	638,217	422,846	508,829	367,456	.	....
Sept .	403,842	624,776	410,574	451,873	420,434	.....	....
Oct ...	415,120	505,260	314,778	549,788	470,400	......	....
Nov..	422,797	570,832	457,889	600,708	742,242	.....	....
Dec..	442,835	679,604	489,121	482,370	....	8,583	....
Tot'ls	2,621,914	6,742,996	4,839,407	5,528,661	5 251,817	8,583	479,950

PACIFIC DIVISION.

Months.	Pacific Entrance.§§							Miraflores Locks.§§§	
	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1910.	1911.
Jan..	....	95,940	94,710	460,250	469,529	518,936	379,810	....	89,243
Feb..	....	95,940	93,480	663,519	671,477	285,791	386,866	....	87,335
Mar..	....	116,820	92,319	783,281	865,696	462,588	639,761	....	....
April	....	110,700	104,855	676,539	731,767	534,322	439,622	....	....
May .	....	112,340	122,157	530,466	720,753	484,509	548,047	....	....
June.	50,676	62,697	133,575	656,621	844,685	475,486	576,100	....	....
July..	41,533	98,400	108,338	696,170	733,181	515,782	520,692	....	....
Aug..	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....	....
Sept .	114,308	105,780	153,975	750,080	662,976	473,585	534,667	......	....
Oct ...	81,836	97,170	357,122	762,276	720,920	467,873	339,815	40,000	....
Nov..	71,176	92,988	365,423	609,089	627,791	425,370	462,283	47,444	....
Dec..	71,094	90,528	349,551	729,960	727,460	387,034	....	68,681	....
Tot'ls	485,153	1,191,233	2,143,789	8,056,025	8,399,498	5,538,745	5,457,904	156,125	176,578

§Total to Dec. 1, 1911, 26,412,260 cu yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906.

§§Total to December 1, 1911, 31,272 347 cubic yards. Of this amount, 590,727 yards were removed by monitors.

§§§Total to December 1, 1911, 642,350 cubic yards; in this total are included 309,647 cubic yards excavated in 1909.

†Total to December 1, 1911, 488,533 cubic yards. There were also 38,425 cubic yards removed by dredges at Gatun Dam site in 1907.

CONCRETE IN LOCKS AND DAMS.

Months.	Gatun Locks.			Pedro Miguel Locks.			Miraflores Locks.		
	1909.	1910.	1911.	1909	1910.	1911.	1909.	1910.	1911.
Jan	......	54,136	72,919	....	16,273	38,513	......	....	24,018
Feb...............	......	55,696	72,103	....	13,218	37,011	......	146	20,896
March	......	60,998	86,884	....	18,793	44,716	......	314	31,173
April..............	......	63,227	67,361	....	24,522	28,635	......	13	38,758
May.	......	74,273	67,844	....	29,576	19,135	......	27	36,154
June	......	89,401	55,305	....	30,631	18,243	......	1,603	26,536
July	......	84,001	71,046	....	41,464	19,906	28	3 672	32,840
Aug................	1,298	85,686	66,928	......	51,264	20,736	74	6,030	57,003
Sept...............	12,294	76,720	57, 98	2,370	50,702	15,379	......	18,133	56,083
Oct................	29,378	86,949	53,636	8,310	61,422	25,637	......	22,159	60,873
Nov................	30,270	75,152	43,907	10,169	64 248	19,622	......	23 871	41,726
Dec................	42,832	80,212	....	13,007	42,834	....	......	21,533	....
Total...........	116,072	886,451	715,231	33,856	444,947	287,533	102	97,501	426,060

From March 17 1909, to December 1, 1911, there were placed in the Spillway of Gatun Dam 164,557 cubic yards of concrete, including 2,417 cubic yards placed in Nov., 1911; in Miraflores Dam, there were placed 321 cubic yards up to December 1, 1911.

FILL PLACED IN DAMS.

M'THS.	Gatun.*				Pedro Miguel.†		Miraflores.‡			
	1910.		1911.		1910.	1911.	1910.		1911.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan...	178,254	236,994	211,992	218,690	... .	......	....	28,151	89,243	24,685
Feb..	292,215	271,788	301,733	211,008	11,510	......	....	1,438	87,335	32,404
Mar..	210,387	332,661	342,800	255,047	22,860	......	......	5,385	25,131	23,940
April	242,440	263,437	368,658	205,130	31,394	......	....	....	14,100	67,260
May..	249,283	194 868	419,348	207,751	23,572	......	....	6,480	18,353	30,032
June .	384,166	258 653	432,008	227,996	1,350	......	....	7,356	53,858	28,315
July..	462,092	180,111	324,947	201 996	......	14,865	....	4,290	24,957	54,415
Aug..	406,606	229,774	259,389	232,4 6	......	24 812	....	10,898	25,000	72,203
Sept..	457,637	223,102	261,838	194,497	......	4, 52	....	11,220	6,409	34,480
Oct...	480,732	259,619	214,320	218, 05	......	3,400	40,000	14,370	7,130	37,250
Nov..	129,666	266,105	266,603	207,157	......	3,190	47,444	8,960	14,370	31,800
Dec..	243,121	169,575	.. ..	....	......	..	68,681	39,224	... .	....
T'tal	3,736,599	2,886,687	3,403,636	2,380 003	90,686	50,319	156,125	137,772	366,336	436 784

*Dry fill begun in January, 1907, and 2,096,477 cubic yards of wet, and 3,241,418 cubic yards of dry fill were placed in 1907, 1908 and 1909.

†170,166 cubic yards placed in dams up to December, 1909, inclusive.

‡138,587 cubic yards of wet fill and 472,091 cubic yards of dry fill were placed in dams up to December, 1909.

CANAL EXCAVATION TO DATE.

By French Companies		78,146,960
French excavation useful to present Canal		29,908,000
By Americans—		
Dry excavation	96,614,838	
Dredges	59,038,826	
Total		155,653,664
May 4 to December 31, 1904	243,472	
January 1 to December 31, 1905	1,799,227	
January 1 to December 31, 1906	4,948,497	
January 1 to December 31, 1907	15,765,290	
January 1 to December 31, 1908	37,116,735	
January 1 to December 31, 1909	35,096,166	
January 1 to December 31, 1910	31,137,677	
January 1 to December 1, 1911	29,246,600	

Totals by Divisions and Amount to be Excavated.

Divisions.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation	8,499 006	35,438,224	1,141	11,789,598
Dredges	26 939 218		11,788,457	
Central—				
Culebra Cut	72,151,742	84,065,024	17,292,263	17,736,272
All other points	11,913,282		444,009	
Pacific—				
Dry excavation	4 235,719	36,150,416	2,696,361	10,143,845
Dredges	31,914,697		7,447,484	
Grand totals		155,653,664		39,669,715

STEAMSHOVEL RECORDS.

Work of Central Division and Relocated Shovels in November.

During the month of November the total amount of material excavated in the Central Division was 1,221,746 cubic yards, of which 126,487 cubic yards were classified as earth, and 1,095,259 cubic yards as rock.

Of this quantity 1,209,498 cubic yards were removed by steam shovels, contractors removed 2,960 cubic yards by sluicing and 9,288 cubic yards by hand.

The high record for the month was made by shovel No. 215, working 23½ days in the Empire District, which excavated 25,265 cubic yards of rock and 15,500 cubic yards of earth or a total of 40,765 cubic yards.

The second best record for the month was made by shovel No. 254, working 24 days in the Culebra District, which excavated 40,425 cubic yards of rock.

The best record for a shovel of the seventy-ton class was made by shovel No. 109, working 24 days in the Culebra District, which excavated 31,460 cubic yards of rock.

Shovel No. 211 working in the Empire District made a high record for one day by excavating 2,962 cubic yards o rock on Nóvember 6.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month and for one day are shown below:

BEST RECORDS FOR THE MONTH.

EMPIRE DISTRICT.

SHOVEL No.	CUBIC YARDS.			
	Earth.	Rock.	Total.	No. of days at work.
215	15,500	25,265	40,765	23½
201	....	35,544	34,544	24
211	....	35,388	35,388	24

CULEBRA DISTRICT.

SHOVEL No.	Earth.	Rock.	Total.	No. of days at work.
254	....	40,425	40,425	24
219	1,501	37,365	38,866	24
231	....	38,328	38,328	23

PEDRO MIGUEL.

SHOVEL No.	Earth.	Rock.	Total.	No. of days at work.
122	19,570	8,770	28,340	24

BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
211	Empire	Nov. 6	Rock	2,962
201	Empire	Nov. 2	Rock	2,413
215	Empire	Nov. 1	Rock	2,296
219	Culebra	Nov. 29	Rock	2,831
206	Culebra	Nov. 13	Rock	2,603
231	Culebra	Nov. 13	Rock	2,567
122	Pedro Miguel	Nov. 20	Earth	1,520

Relocated Line of Panama Railroad.

The total steamshovel excavation on the relocated line of the Panama railroad amounted to 316,010 cubic yards.

The best month's record was made by Steamshovel 257, working on the Gatun section, with excavated 60,620 cubic yards of solid rock.

In the 70-ton class, the best month's record was made by Steamshovel 110, working near Empire, which excavated 31,120 cubic yards of earth and rock.

The best day's record for shovels with 5-yard dipper was made by Steamshovel 257, which excavated 3,470 cubic yards of rock on November 14.

The best day's record for shovels with 3-yard dippers was made by Steamshovel 101, which excavated 1,920 cubic yards of earth and rock on November 20.

Month's records are place measurements and day's records are car measurements. All material was loaded in 10-yard dump cars.

BEST RECORDS FOR THE MONTH.

SHOVEL No.	Location.	Cubic Yards by Cross Section.			
		Days worked.	Earth	Rock.	Total.
257	Gatun	24	....	60,620	60,620
262	M'nte Lirio	23	....	44,000	44,000
110	Empire	24	12,520	18,600	31,120
225	Gatun	24	2,800	25,600	28,400
123	Empire	23	20,130	8,000	28,130

BEST RECORDS FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
257	Gatun	Nov. 14	Rock	3,470
262	Monte Lirio	Nov. 7	Rock	2,720
110	Empire	Nov. 20	Earth and rock	1,920
117	Gatun	Nov. 22	Earth and rock	1,900
128	Gatun	Nov. 1	Earth and rock	1,800

Total steamshovel output during the month of November, 316,010 cubic yards.

Total number of steamshovel working days, 259.

Average output per working day, 1,220 cubic yards.

Central Division Unloaders.

Lidgerwood cars were unloaded on the Central Division dumps during the month of November, as follows:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa	4	1,063	21,260
Miraflores	2	485	9,700
Gamboa	*4	979	20,559
Total	10	2,527	51,519

*1 unloader worked from 22nd to 29th only.

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of November, follows:

DESTINATION.	Number Cars.	Cubic Yards.
Pacific Division	1,909	33,739
Central Division	27	405
Atlantic Division	31	751
Mechanical Division	2	50
Quartermaster's Department	8	200
Panama railroad	21	525
Miscellaneous	5	75
New concrete dock	27	405
Total	2,030	36.150

Pilots, Masters, Mates, Engineers, Chauffeurs.

Examinations for pilots, masters, mates and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on December 20, 1911. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m. on December 20, with papers in proper form. In addition, applicants for chauffeurs' license must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

International Brotherhood of Steam Shovel and Dredge Men.

Local No. 19, I. B. of S. S. & D M. will hold its regular meeting on Sunday, December 17, at Empire lodge hall at 12.15 p. m. All members are requested to attend.

Rainfall from December 1 to 9, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	.04	7	.04
Balboa	.00		.00
*Miraflores	.10	9	.10
Pedro Miguel	1.45	9	1.45
Rio Grande	1.06	9	1.07
Central Section—			
Culebra	.18	9	.18
*Camacho	.91	9	.91
Empire	.00		.00
Gamboa	.02	8	.04
*Juan Mina	.23	8	.34
Alhajuela	.09	1	.15
*El Vigia	.05	3	.05
*Gorgona	.20	4	.29
San Pablo	.05	6	.09
Tabernilla	.09	9	.16
Bohio	.30	7	.83
*Monte Lirio	.41	6	1.15
Atlantic Section—			
Gatun	.73	8	1.23
*Brazos Brook	.36	6	.82
Colon	.86	9	1.81
Porto Bello	.23	2	†.41

*Standard rain gauge—readings at 5 p. m. daily. Automatic rin gauge at unstarred stations—values midnight to midnight. †To 5.00 p. m. December 7.

November Rainfall for Three Years.

STATION.	1909	1910	1911	Station Average	Years of Record	Rai'y days 1911
Pacific Section-						
Ancon	15.14	4.29	7.57	10.72	15	20
Balboa	15.99	3.97	5.55	9.32	13	17
Miraflores	22.43	10.20	9.24	12.31	4	20
Pedro Miguel	20.38	10.02	7.49	11.64	4	22
Rio Grande	24.17	11.22	13.62	11.71	7	25
Central Section-						
Culebra	24.46	10.81	12.37	12.51	23	25
Camacho	27.07	13.15	12.43	14.32	6	22
Empire	20.99	8.85	11.73	11.52	7	25
Gamboa	28.41	16.90	10.09	12.46	29	24
Alhajuela	36.22	14.87	13.39	14.60	13	25
El Vigia	35.64	14.20	9.54	17.86	4	25
Gorgona	30.24	11.54	10.23	13.85	8	23
San Pablo	27.59	13.15	11.18	14.35	5	26
Tabernilla	30.84	13.04	12.15	15.54	5	27
Bohio	35 39	22.37	17.01	19.26	18	26
Trinidad	33.28	22.95	18 76	22.30	4	27
Monte Lirio	34.73	25.60	20.05	26.49	4	30
Atlantic Sec.-						
Gatun	41.10	26.06	15.78	22.85	7	28
Brazos Brook	38.17	29 28	18 86	25.16	6	28
Colon	42.50	30.04	15 81	21.86	41	23
Porto Bello	45.03	23.08	24.40	30.36	5	25
Nombre de D.	25 62	14.59	......	......	2	..

WEATHER CONDITIONS, CANAL ZONE, NOVEMBER, 1911.

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean	Maximum.	Date.	Minimum.	Date.		Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon	29.810	79 5	89	27	72	14	..	15.81	21.86	23	5,583	S.E.	27	N.E	30
Culebra	29.830	78 6	89	28	69	14	..	12.37	12 51	25	3,359	N.W.	32	E.	2
Ancon	29.823	79 4	94	27	68	14	..	7.57	10 72	20	3,997	N.W	19	S.	15

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The general meeting of the Cristobal Woman's Club was held at the Commission clubhouse on Wednesday, December 6, the speaker being Miss Alice Alexander, supervisor of primary grades in the Canal Zone schools. She outlined ideal conditions for the primary school, gave practical examples of the workings of the child mind, emphasized the necessity of encouraging humor in the child, and the main point in the training of the child in and out of the school—to keep him happy. The board of managers has voted to place a sanitary drinking fountain in the city of Colon. The subcommittee of the philanthropy department reported that the last of the series of free health lectures in Colon had been given on October 31. It is estimated that 1,200 persons heard these lectures, the largest attendance being in October, when the lecture was given in French before an audience of more than 400. The use of the hall for the lectures is given free of rent, the slides used were furnished by the Department of Sanitation and the electric light for the lantern was installed by the Commission. The subcommittee is looking to the purchase of new slides, with the possible addition of moving pictures, and the increase of the scope of the work. A second course of six lectures will begin in January. The next meeting of the Cristobal club will be on December 13, when the home department will present a program of papers on home life in England. Mrs. J. L. Storla and Miss Daisy Farquason will be the speakers.

The Gatun Woman's Club will meet at the home of the president, Mrs. W. J. Allen, on Thursday afternoon, December 14. Plans will be made for an open meeting under the social committee in January.

The Paraiso Woman's Club is preparing for the Christmas celebration which will be held in the chapel on Christmas Eve. A fund has been raised in the village for the purpose. About 75 children will be given presents and will participate in the exercises of the evening. The playground equipment given by the club has been placed under the school building, the ground having been leveled and prepared for the purpose. The equipment consists of three swings, three sets of rings, three horizontal bars and one sand pit. Mrs. W. M. Coutermarsh has resigned as secretary and Mrs. W. M. McIntyre has been appointed in her place for the remainder of the term which expires in January.

Church Notes.

The monthly meeting of the Woman's Foreign Missionary Society of the Methodist Episcopal Church, Panama, was held at the home of Mrs. E.M. Keyser, Ancon, on Thursday, December 7. Mrs Harry Compton presided, and the lesson on Buddhism was conducted by Mrs. J. H. Stokoe; the attendance was large, there being a number of out of town visitors present. The next meeting will be held on January 18, when Mrs. E. L. Kent will entertain the society at the Commission chapel in Paraiso.

The Altar Guild of St. Mary's Protestant Episcopal Church, Empire, will hold a Christmas sale at the Commission clubhouse on Monday evening, December 18, from 6 to 10.

The Altar Society of St. Ferdinand's Roman Catholic Church, Empire, held a cake sale in the parish house on November 29, the proceeds of which were $20. The society will hold a similar sale on Saturday, December 23. The club in connection with St. Ferdinand's Church held a dance at Kangaroo Hall on December 9. The club holds a dance monthly.

On Sunday, December 3, the new building of the Church of St. Philip, Protestant Episcopal mission at Las Cascadas, was dedicated. The building is a remodelled frame structure, given to the mission to replace the old building which was required for use at Camp Otis. The Rev. W. H. Decker, priest in charge of the mission, was assisted by Chaplain Henry A. Brown, general missionary, and three other priests of the missions for West Indians. St. Philip's mission was founded eight years ago.

On Thursday afternoon, December 14, the children of the West Indian Progressive Society and the Wesleyan schools will be given an outing in the baseball park, Colon.

Union Church at Cristobal.

It has been decided to move a new laborers barracks from Camp Bierd to Cristobal there to be remodeled for use as a Commission church and lodge hall. This will take the place of the old church and lodge hall now occupied by the courts.

Obituary.

Oscar L. Des Londes, an employe of the Panama Railroad Telephone and Telegraph service, was killed by an electric shock while at work at Gatun on December 8. He was 34 years of age, married, and had been on the Isthmus two years, coming here from New York. He is survived by his wife who is living at Gatun.

Jinkney Jefferies, a member of the Tenth Infantry at Las Cascadas, died in Ancon Hospital on December 2, as the result of being struck on the head with a stone in an altercation between two other soldiers. He was twenty-one years of age, single, and had been on the Isthmus six weeks. He is survived by his mother, Mrs. Laurie Jefferies, living at Finley, Ky.

Missing Men.

Any one having information regarding the whereabouts of Joseph Delaney of Brooklyn, N. Y., a machinist who came to the Isthmus two years ago, is requested to communicate with the American Legation, Panama.

Any one having information regarding the whereabouts of J. B. Mcarthy who came to the Isthmus from Bolivia last July, is requested to communicate with Claude C. Pierce, Quarantine Officer, Cristobal.

Any one having information regarding the whereabouts of H. A. Press, who is supposed to be on the Isthmus, is requested to communicate with THE CANAL RECORD.

Baseball.

A match game of baseball was played at Colon on Sunday, December 10, by teams representing Mount Hope and the McClintic-Marshall Company. The score follows:

	1	2	3	4	5	6	7	R	H	E
Mt. Hope......	2	0	0	2	2	5	—	11	10	8
McC-M-Co.....	0	0	0	0	3	0	0	3	7	1

Red Cross.

The following officers have ben elected for the year ending October 31, 1912, as a result of the recent ballot by Canal Zone Red Cross members: Chairman, Col. C. A. Devol; Vice Chairman, Lieut.-Col. Wm. L. Sibert; Secretary, Mr. A. B. Dickson; Treasurer, Lieut.-Col. John L. Phillips; Executive Committee, Col. W. C. Gorgas, Maj. Chester Harding, Mr. R. C. Shady.

The financial statement of the Canal Zone Chapter, for the month of November, follows:

RECEIPTS.		
November 1, On hand..........	$1,889.73	
November 8, Returned money advanced to destitute American account of vacation pay.............	161.00	
November 17. Interest on money in bank, September and October..	7.52	
November 29, Returned money advanced to destitute American account of vacation pay.............	163.00	
November 30, Membership dues		
November 30, Membership dues received during month...........	6.00	
Total receipts.........................		$2,227.25
DISBURSEMENTS.		
November 16, Relief of Colon Fire sufferer..........	$10.00	
November 16, Relief of ex-employe suffering from tuberculosis......	25.00	
November 17, Relief of Colon Fire sufferer..........	8.50	
November 17, Postage, use of treasurer	2.00	
November 21, Postage, mailing ballots for election	10.00	
November 23, Cash advanced to American without funds.to be returned at expiration of leave............	150.00	
November 23, Relief of wife of Zone prisoner....	15.00	
Total disbursements....................		$220.50
November 30, Balance on hand..		$2,006.75

JOHN L. PHILLIPS, *Treasurer.*

Approved:
C. A. DEVOL, *Chairman.*

School Holidays.

The Canal Zone public schools will close at the regular time, Friday afternoon, Deember 22, for the Christmas Holidays, and will reconvene Tuesday morning, January 2.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Culebra, C. Z., Sunday, December 17, 1911, at 5.45 p. m. The program follows:

1. March—*The New Colonial* ....Hall
2. Selection—*Naughty Marietta*...........Herbert
3. Duet for Cornets—*Bolero* ....Hall
   Messrs. Bernell and Sanmartin.
4. Overture—*Jeanne Maillotte*............Reynaud
5. Flower Song—*Hearts and Flowers* (By request).........Tobani
6. Waltz—*Farewell to Munich*..............Gung'l
7. Medley Selection—*Stern's American-European Hits*...........Williams
8. Reverie—*Thoughts of Home*....Chas. E. Jennings
9. March—*Stop, Stop, Stop*.................Berlin

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Las Cascadas, December 24, 1911, at 6 p. m.

Misdirected Letters.

ANCON, C. Z., December 11, 1911.

The following insufficiently addressed letters originating in the United States and its possessions have been received at the office of the Director of Posts and may be secured upon request of the addressees:

Bartlett, William
Baumas, Conrad
Blacklock, Mrs. Anna
Bondswell, James M.
Bronson, Mrs. C. A.
Burrow, Bardon C.
Campbell, Otis T.
Collins, Mrs. Mary K.
Chamber of Commerce
Connor, M. D.
Coyle, Francis J.
Domington, Frank
Drayton, Allen C.
Dumfey, Matthew J.
Edwards, J. B.
Gibson, Miss Elsie
Harper, Robt.
Hartel, Geo. W.
Holmes, Rufus E.
Jaquillon, E.
Maloney, J. A.
McCormick, J.
Paulman, Miss Beulah
Russ, Mike
Sims, E. D.
Tucker, H. R.

LOST—A gold monogram breast pin between the Empire depot and Y. M. C. A. on the night of Decembe 5. A liberal reward is offered if returned to T. B. Gardiner, Gorgona.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The following is the schedule of moving picture entertainments for the week of December 18 to 23: Monday, Cristobal; Tuesday, Gorgona; Wednesday, Gatun; Thursday, Corozal; Friday, Culebra; Saturday, Empire.

The standing of teams in the Isthmian Basket Ball League on December 9, was as follows:

Team.	Won.	Lost.	P. C.
Cristobal	9	0	1.000
Gatun	6	3	.600
Culebra	5	4	.556
Gorgona	4	4	.500
Corozal	1	7	.125
Empire	1	8	.111

Results of games played December 9 were as follows: Cristobal, 15; Culebra, 10. Gatun, 51; Empire, 18.

Games to be played: December 15, Empire at Gorgona; December 16, Gatun at Corozal; December 23, Corozal at Cristobal; Culebra at Gorgona.

The Hon. W. J. Bryan of Nebraska arrived at Colon on Monday, December 11, and that evening made addresses at the Commission Clubhouses at Culebra and Corozal. On December 12 he spoke at Gatun and Cristobal, and on the 13th he will speak at Gorgona and Empire. He will leave the Isthmus on December 14.

COROZAL.

Eighteen men are playing in the handicap pool tournament. The date for closing is Wednesday, December 20. The standing of the ten highest is as follows:

Name.	Won.	Lost.	P. C.
Lofgren	13	2	.867
Roberts	12	2	.857
Baker	9	3	.750
Wrightson	9	5	.643
Ritter	9	5	.643
Hamlin	7	4	.636
Morris	6	4	.600
Hostetter	8	6	.571
Nagle	6	6	.500
Ives	3	3	.500

CULEBRA.

The Gorgona and Culebra basket ball game will be played on Friday night instead of the following week on Saturday.

The standing in the billiard tournament is as follows:

Name.	Won.	Lost.
Dubois	7	1
Vogel	7	1
Tragesdorf	6	1
McCann	7	3
Hepler	6	4
Peters	6	4
Conlon	5	6
Janney	4	6
Thomson	3	8
Beyer	2	7
Hertz	2	8
Case	0	8

The four team bowling tournament has closed with the following results, according to number of the team:

Team No. 1	13	5	14,122
Team No. 3	10	8	13,506
Team Bo. 4	8	10	13,291
Team No. 2	5	13	13,056

Each man on the winning team will receive a gold medal. The high team score for three games is 2,501, Team No. 1. The high team score for one game is 886, Team No. 1. The high individual score during the tournament is 224 by J. C. Cushing.

Cristobal won the basket ball game with Culebra on Saturday evening. The score was 15 to 10, with the following line-up:

Culebra.	Cristobal
Cushing	Sartor
Vanzandt	Luce
Hepler	Weller
Barcroft	Sterner
Stillwell	Schwallenberg
Kenney	Schlager

The Empire boys lost in bowling at Culebra, Saturday morning, after the bowling game the boys played a game of basket ball with the Culebra team and also lost.

EMPIRE.

The following high scores were bowled in duck pins during the week: Rodeighiro, 104, 118, 108, 115; Payne, 102; Dakin, 101; N. Giavolli, 111; Parkis, 104.

The Cristobal duck pin bowling team will bowl the Empire team on the latter's alleys on Saturday, December 16.

A handicap pool tournament has been arranged for the month of December. Prizes will be given for the first, second, and third places.

The annual Christmas entertainment for the children of Empire will be held in the clubhouse on Saturday night, December 23.

GORGONA.

The Gorgona Musical Club furnished a program for the sunset singing service at the Chapel in Las Cascadas for the soldiers of Camp Otis on Sunday, December 10. Solos were sung by Mrs. J. H. Murray, Mrs. Glen Pearson, Miss Beehler, and Mr. Thos. Gardner. E. A. Putnam of Cristobal delivered an address on the subject "Brain *vs* Brawn." Mrs. T. S. Booz accompanied all of the musical numbers on the piano. Fully 300 were present.

The singing at the sunset service on December 10 was led by Carl Moyer; M. L. Booz, piano; Ernest Reinhold, violin; Jess T. Hopkins, cornet.

A. J. Cameron tendered the basket ball team a turkey dinner at the hotel on Wednesday evening, December 6. Captain of the team, Jerry Carpenter, presided at the head of the table and Oscar O. Kuentz, manager assisted with the carving at the foot of the table. There were present Messrs. F. G. Swanson, T. S. Booz, Wm. Earl, Edgar Louden, A. M. Johnson, S. B. Stevens, A. J. Cameron, and Jess T. Hopkins.

GATUN.

The names of C. A. Strom and Maj. J. P. Jervey have been added to Class No. 1 in Spanish.

Miss Harris served as accompanist at the moving picture entertainment on Thursday evening.

"Political Presidential Possibilities" were discussed by the Drop-in-Discussion Club on Sunday evening, December 10. Among those taking a prominent part were Messrs. St. Clair, Formon, Hanson, Dillon, Mussina and Smith.

A sacred concert was given by the MacWatters Quartet on Sunday afternoon, December 10. J. Adams Oakes delivered a brief address.

The Gorgona Minstrel Troupe will play at Gatun on December 19.

Seven new library books were purchased during the past week as well as several new records for the phonograph.

Empire played basket ball at Gatun on Saturday evening, December 9. Gatun won by a score of 51 to 18. A social hour with refreshments followed the game.

CRISTOBAL.

A contest in progressive chess was held on Tuesday evening December 5 in the chess club room. Messrs. Payton, Millman, Morrison, Davidson, Farrugia, Cleall, Randolf, Merrill, Harfeld, and Chambers played. Fifteen games were played. Mr. Davidson carried off the honors of the evening, winning three games and losing none.

A public debate was held on Wednesday evening December 6 upon the subject "Resolved that the Nations of the World should Disarm in the Interest of Peace." Threee speakers on each side, namely, affirmative, Messrs. Elliott, Storla, and O'Neal; negative, Messrs. Morrison, Dinnin, and Wempe. Decision was rendered in favor of the affirmative. Musical numbers were rendered by Miss Dorothy Layland. After the program refreshments were served. One hundred and thirty-one people attended.

On Friday, December 15, the Gorgona Minstrels will give an entertainment. Admission, members free, others 50 cents.

Two of the local departmental duck pin teams defeated the picked teams from Empire and Gatun last Saturday night with scores as follows:

Empire.		*Quartermaster's Dept.*	
Pinney	305	Barrett	268
Leon	268	Hess	264
Lippert	170	Jacques	79
Swallow	83	Herring	176
Dakin	69	Smith	259
Davis	183	Louch	303
Rodeghireo	272		
Total	1,350	Total	1,349
Gatun.		*Dry Dock and Comsy.*	
Green	270	Collins	277
Dickson	158	Wheeler	280
Teall	73	Gibson	296
Worcester	272	Herrington	263
DePoorter	285	Weston	271
Barte	258		
Total	1,316	Total	1,387

On December 9, the following teams were leading in the Ragtime Tournaments: Ten Pins, Collins and Louch, 1,098; duck pins, Barrett and Louch, 505; candle pins, Barrett and Bullard, 534.

The following high scores were made by local bowlers during the week ending December 9: Duck Pins—Barrett, 107, 107, 101; Louch, 122, 107, 100, 105; Weston, 114, 103, 102; Marquez, 109; Vandabergh, 108; Orr, 107 ; Farrell A, 102 ; Wheeler, 111 ; 102 ; 105 ; Collins, 100 ; Bullard, 105, 103, 100; Gibson, 102. Ten Pins—Rabbitt, 200, 214; Collins, 209, 209; Gibson, 210; Russell, 203; Bullard, 200. Candle pins—Barrett, 101, Louch, 110; Blackburn, 100.

The topic for discussion by the Debating Club on Wednesday evening, December 20, will be "Resolved that the Canal Zone should be a military reservation."

LOST—Six year pin, between Dock 1 and Cristobal Corral on Bolivar Street—marked on back "James A. Avery, April 7, 1905." Finder will be rewarded for return to Mount Hope Depôt.

OFFICIAL CIRCULARS.

Acting Chief Clerk.

GORGONA, C. Z., December 7, 1911.

TO ALL CONCERNED:

Effective December 8 and during absence on leave of Chief Clerk and Assistant, Mr. F. G. Swanson, is designated Acting Chief Clerk of the Mechanical Division.

A. L. ROBINSON,
Superintendent, Mechanical Division.

Inspection of P. R. R. Vessels.

CULEBRA, C. Z., December 7, 1911.

CIRCULAR No. 239-B.

Inasmuch as Executive Order of July 21, 1911, providing for the inspection of steam vessels navigating the waters of the Canal Zone, requires the Board of Local Inspectors of the Canal Zone to make the inspection therein enjoined, which covers boilers as well as hulls of vessels, in the case of Panama Railroad Company's floating equipment the provisions of Circular No. 239-A (Boiler Inspection Rules and Regulations), so far as the same require the Boiler Inspection Service of the Mechanical Division to inspect boilers of Panama Railroad Company's floating equipment, are hereby revoked.

GEO. W. GOETHALS,
Chairman Isthmian Canal Commission.
President Panama Railroad Company.

Sale of Scrap.

CULEBRA, C. Z., December 9, 1911.

TO ALL CONCERNED.

The Commission has entered into contract whereby the following prices are received for items mentioned:

Material.	Unit Price Per 100 Lbs	Price Per Ton
Scrap copper screens	$8.25	$165 00
Scrap manila rope	2.18	43 00
Scrap rubber	2.10	42.00
Scrap hose	2.50	50 00

Great care should be exercised to see that all of this class of material that becomes unserviceable is turned into the nearest Quartermaster's Storekeeper as scrap.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Auction of Unclaimed Shipments.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., December 8, 1911.

In order to recover freight and storage charges, the Panama Railroad will dispose of the accumulation of Over and Unclaimed Shipments now in its possession, by public auction, commencing Wednesday, January 10, 1912, at 9.30 a. m.; sale to be held on Dock No. 11, Cristobal, C. Z.

The items to be sold consist of a miscellaneous assortment of wines, liquors, household goods, building material, stationery, groceries, dry goods, machinery, and merchandise in general, all of which has been held six months and over in an effort to locate owner.

J. A. SMITH, *General Superintendent.*

Sale at Public Auction.

There will be sold at Public Auction, by the District Quartermaster, at the old corral, Ancon, 2 p. m., Saturday, December 23, 1911, to the highest bidder, for cash, the following Isthmian Canal Commission property: Ten (10) mules, (American) and one (1) pony, (native). The Government reserves the right to accept or reject any or all bids. For further information apply to District Quartermaster, Ancon, Canal Zone. C. A. DEVOL, *Chief Quartermaster.*

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, December 9, 1911. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Dec. 3	126.9	93 2	46.3	16.8	16.6
Mon., Dec. 4	126.6	93.1	46.0	16.4	16.2
Tues., Dec. 5	126.5	93.0	45.8	16.0	15.8
Wed., Dec. 6	126.4	93 0	45.8	15.7	15.5
Thurs., Dec. 7	126.4	92.8	45.6	15.4	15.2
Fri., Dec. 8	126.3	92.8	45.6	15.2	15.0
Sat., Dec. 9	126.3	92.8	45.5	15.0	14.9
Height of low water	125.0	92 0	44 0		

Married.

STEVENS-KELLY—At the Y. M. C. A., Cristobal, on December 7, Clara Marion Kelly of New York, to Geo. H. Stevens of Lee, Mass., the Rev. J. L. Wise officiating. Canal Zone residence, Paraiso.

FOUND—A pearl brooch in Panama. The owner can have it by calling at Piza's store in Panama and identifying her property.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning December 11, 1911.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	*16
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24

MISCELLANEOUS.	
Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Veal, per pound	1 20
Beef, per pound	25
Eggs, fresh, dozen	39
one-half dozen only	20
Bluefish, fresh, per pound	14
Halibut, fresh, per pound	15
Oysters, 1 qt. kegs, per keg	50

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each 60, 70, 80, 90	1.00
Ducks, Western, about 4½ pounds, each	1.00
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	28
Squabs, each	35
Capons, each	2.10
Grouse, each	50

CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡18
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30

DAIRY PRODUCTS.	
Butter—Creamery special, per pound	39
Cheese—Roquefort, per pound	45
Philadelphia cream, cake	10
Young America, per pound	20
Swiss, per pound	26
Edam, each	1.00
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**25
Buttermilk, bottle	**15
Fer-mil-lac, bottle	**25

	Price.
Ice cream, quart	‡25
½-gallon	‡50

VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	6
Cabbage, per pound	4
Cucumbers, per pound	12
Carrots, per pound	3
Lettuce, per pound	12
Onions, per pound	3½
Potatoes, white, per pound	3½
sweet, per pound	2
Parsnips, per pound	4
Parsley, per pound	10
Squash, per pound	3
Turnips, per pound	3
Yams, per pound	3
Apples, per pound	5
Cranberries, per pound	9
Grapes, per pound	10
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12
Pears, per pound	10

---

*Indicates reduction from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
‡Sold only from commissaries; no orders taken for delivery

Supplies for Canal Work.

The following steamers with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending December 9:

Oruba, December 3, from New York, with 36 cases tee calks, 8 cases clocks, for stock.

Kiora, December 4, from Baltimore, with 20,500 cases dynamite, 1,060 kegs nails, 1,384 bundles corrugated iron, 500 kegs bolts, 2,000 kegs spikes, 9,000 bundles tie plates, 1,334 pieces sewer pipe, for stock; 868 pieces steel ties, for Atlantic Division; 2,329 pieces steel ties, for Pacific Division; 2,584 pieces sewer pipe, for Atlantic Division; 284 packages couplers, 200 car wheels, for Mechanical Division.

Hermiston, December 4, from New York, with 132,338 bags cement, for Atlantic and Pacific Divisions.

Karen, December 5, from New Orleans, with 8,881 pieces creosoted ties, for Panama Railroad Company; 78 pieces piling, for stock.

Mackinaw, December 6, fron San Francisco, with 403 bales alfalfa hay, for stock.

Atenas, December 7, from New Orleans, with 79 bundles castings, 119 sacks brackets, for Atlantic Division; 12 cases incandescent lamps, for Mechanical Division; 1,580 pieces creosoted ties, for Panama Railroad Company; 185 bales rice straw, 125 barrels fire clay, 250 bundles switch stands, 50 cases library paste, 411 pieces car stakes, 13 cases hardware, 77 pieces piling, 6,697 pieces yellow pine lumber, for stock.

Metapan, December 7, from New York, with 51 kegs boat spikes, 39 coils rope, 25 coils tarred marline, 15 bundles hardware, for stock.

Colon, December 7, from New York, with 200 bundles brake shoes, 10 cases lamp shades, for Mechanical Division; 47 cases books, 7 cylinders acetylene gas, for Chief Engineer; 4,000 pieces tiling, for Panama Railroad Company; 728 bundles bolts, 19 cases bolts, for Atlantic Division; 204 bales oakum, 2,141 pieces steel ties, for Pacific Division; 48,960 pieces conduit tile, for Atlantic Division; 20 cases lanterns, 7 barrels washers, 121 barrels coal tar, 456 bundles shovels, 15 casks chains, 86 crates sledge handles, 14 bales cotton mops, 17 bales cork life preservers, 15 cases stationery, 300 barrels screw spikes, 15 cases tacks, 50bundles steel bars, 30 barrels sea coal facing, 60 crates stoves, 49 cases pipe fittings, for stock; and a miscellaneous cargo, the whole consisting of 57,693 packages, weighing 815 tons.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending December 20, 1911. (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
December 14	......	4.20	10.32	4.48	11.05
December 15	......	5.30	11.58	5.52	......
			P.M.		
December 16	12.10	6.32	12.57	6.57	......
December 17	1.10	7.30	1.57	7.53	......
December 18	2.02	8.20	2.47	8.42	......
December 19	2.48	9.03	3.30	9.27	......
December 20	3.30	9.45	4.08	10.08	......

LOST—A reward is offered to anyone who will give any information regarding Canal Medal which belonged to Jas. Humphreys, Master of Dredge No. 85, at Gatun, and which was lost on board the dredge on or about December 1.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.				
Panama	P. R. R.	Thursday	Dec.	14
Allianca	P. R. R.	Wednesday	Dec.	20
Colon	P. R. R.	Wednesday	Dec.	27
Advance	P. R. R.	Tuesday	Jan.	2
Panama	P. R. R.	Tuesday	Jan.	9
Allianca	P. R. R.	Monday	Jan.	15
Colon	P. R. R.	Monday	Jan.	22
Advance	P. R. R.	Saturday	Jan.	27
Panama	P. R. R.	Saturday	Feb.	3
Allianca	P. R. R.	Friday	Feb.	9
Colon	P. R. R.	Friday	Feb.	16
Advance	P. R. R.	Friday	Feb.	23
Panama	P. R. R.	Thursday	Feb.	29

CRISTOBAL TO NEW YORK.				
Colon	P. R. R.	Wednesday	Dec.	13
Advance	P. R. R.	Wednesday	Dec.	20
Panama	P. R. R.	Wednesday	Dec.	27
Allianca	P. R. R.	Tuesday	Jan.	2
Colon	P. R. R.	Tuesday	Jan.	9
Advance	P. R. R.	Monday	Jan.	15
Panama	P. R. R.	Sunday	Jan.	21
Allianca	P. R. R.	Sunday	Jan.	28
Colon	P. R. R.	Saturday	Feb.	3
Advance	P. R. R.	Friday	Feb.	9
Panama	P. R. R.	Friday	Feb.	16
Allianca	P. R. R.	Thursday	Feb.	22
Colon	P. R. R.	Thursday	Feb.	29
Advance	P. R. R.	Wednesday	Mar.	6
Panama	P. R. R.	Wednesday	Mar.	13

NEW YORK TO COLON.				
Prinz Altai	H.-A.	Friday	Dec	8
Magdalena	R. M.	Saturday	Dec.	9
Almirante	U. F. C.	Thursday	Dec.	14
Prinz Eitel Friedrich	H.-A.	Saturday	Dec.	16
Santa Marta	U. F. C.	Thursday	Dec.	21
Prinz Sigismund	H.-A.	Friday	Dec.	22
Clyde	R. M.	Saturday	Dec.	23
Metapan	U. F. C.	Thursday	Dec.	28
Prinz August Wilhelm	H.-A.	Saturday	Dec.	30
Zacapa	U. F. C.	Thursday	Jan.	4
Prinz Altai	H.-A.	Friday	Jan.	5
Thames	R. M. S.	Saturday	Jan.	6
Almirante	U. F. C.	Thursday	Jan.	11
Prinz Eitel Friedrich	H.-A.	Saturday	Jan.	13

COLON TO NEW YORK.				
Clyde	R. M.	Tuesday	Dec.	12
Metapan	U. F. C.	Thursday	Dec.	14
Prinz August Wilhelm	H.-A.	Tuesday	Dec.	19
Zacapa	U. F. C.	Thursday	Dec.	21
Prinz Altai	H.-A.	Saturday	Dec.	23
Thames	R. M.	Tuesday	Dec.	26
Almirante	U. F. C.	Thursday	Dec.	28
Prinz Eitel Friedrich	H.-A.	Tuesday	Jan.	2
Santa Marta	U. F. C.	Thursday	Jan.	4
Prinz Sigismund	H.-A.	Saturday	Jan.	6
Trent	R. M.	Tuesday	Jan.	9
Metapan	U. F. C.	Thursday	Jan.	11

NEW ORLEANS TO COLON.				
Atenas	U. F. C.	Saturday	Dec.	2
Parismina	U. F. C.	Wednesday	Dec.	6
Turrialba	U. F. C.	Saturday	Dec.	9
Cartago	U. F. C.	Wednesday	Dec.	13
Abangarez	U. F. C.	Saturday	Dec.	16
Heredia	U. F. C.	Wednesday	Dec.	20
Atenas	U. F. C.	Saturday	Dec.	23
Parismina	U. F. C.	Wednesday	Dec.	27
Turrialba	U. F. C.	Saturday	Dec	30
Cartago	U. F. C.	Wednesday	Jan.	3

COLON TO NEW ORLEANS.				
Turrialba	U. F. C.	Thursday	Dec.	21
Cartago	U. F. C.	Thursday	Dec.	21
Abangarez	U. F. C.	Thursday	Dec.	28
Heredia	U. F. C.	Thursday	Dec.	28
Atenas	U. F. C.	Thursday	Jan.	4
Parismina	U. F. C.	Thursday	Jan.	4

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct leave on Thursdays at 3 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

The Leyland Line steamer *William Cliff* will sail from Colon for Port Limon and New Orleans, on December 22.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, DECEMBER 20, 1911. No. 17.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of November is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal Work in all departments and divisions.

Gatun Spillway Dam.

Sheet piling and accessory materials are being collected at the Spillway of Gatun Dam for coffering off parts of the channel while the base of the Spillway dam is being built.

In laying the floor above and below the dam no concrete was placed under the downstream toe and a space 40 feet wide and reaching elevation —2 extends across the present channel of flow. Silt and debris will have to be cleaned from this space before the concrete forming the downstream toe of the dam can be placed.

In the first stage of the operations, stop plank will be placed to rest against the upstream side of the piers for a little over half way across the channel, beginning at the east side; a sheet pile cofferdam will be driven across the 40-foot space and a cofferdam filled with clay and resting on the concrete floor below the dam will complete the closure. The space enclosed will be pumped out and cleaned and the laying of concrete will follow.

The piling will be driven with a steam hammer with leads suspended from the boom of a stiff-legged derrick, resting on one of the piers. Derricks will also be used in placing concrete which will be supplied in two-cubic-yard buckets from the mixing plant 4,000 feet away.

Cristobal Terminal Docks.

The breakwater at the Cristobal Terminal Docks has been extended 1,800 feet from the shore line. This trestle has been filled and a double track laid for a distance of 800 feet. At a point 1,100 feet from the shore line, the mole crosses a very soft bottom which has given considerable trouble in the construction of the breakwater. There have been three or four settlements at this point, and in the small norther which occurred the first week in December a section 150 feet long was taken out. This section was practically filled, the track being supported on ground, but the action of the waves spread out this material until it now lies three or four feet below the surface of the water.

A pile driver was started on replacing this gap, which was closed on December 11. It is anticipated that there will be further trouble at this point before the solid material finally reaches bottom.

The second shipment of steel plate for caisson construction was lost at sea with the Munson Line steamship *Moldegaard*, which went ashore at Cat Island. The progress of the work may be retarded slightly due to this loss, although the Chief Quartermaster is endeavoring to have a replace shipment made at the earliest possible date. The sinking of caissons is now under way on Dock 16 and Pier 17, and on Saturday night, December 9, there had been driven 2,131 linear feet of 4 foot cylinders on Dock 16, and 840 linear feet of 6-foot cylinders on Pier 17.

Drainage of Dredge Discharge into Manzanilla Bay

The suction dredges excavating in the Canal prism between Gatun Locks and Mindi discharge behind a dike on the east side of the Panama railroad at Mindi, whence the water flows off into the Mindi River and thence to the French canal. The silt carried by the water is rapidly filling the river and the canal to such an extent that navigation in the latter, even for light draft vessels, will soon be impossible. It is convenient to keep the old canal open for the towing of barges of cement from Cristobal to Gatun, and also for the passage of launches. Approval has therefore been given for a project to keep the discharge from the dredges out of the old canal, and divert it into Manzanilla Bay through the old East Diversion channel. The diversion ditch formerly ran from Gatun to the bay, into which it emptied at the mouth of the Escondido River.

The project for utilizing this ditch involves the excavation of the dam thrown across it some years ago to store an auxiliary supply of water for Cristobal and Colon, the construction of a trestle across the channel to take the railroad track to Mindi magazine, a bridge over the channel to take the Gatun-Colon highway, and the excavation of 20,000 cubic yards of soft material by clamshell bucket on a derrick barge.

Cranes for Lock Machinery.

Award has been authorized to the Industrial Works of Bay City, Mich., of a contract for four locomotive cranes which will be used in the erection of machinery in the locks. The total price for the cranes with auxiliary hooks and lines is $31,500. No award was made for the stiff-leg derricks, for which bids were requested in the same circular with the cranes.

The cranes required are 15-ton class, capable of handling 8,000 pounds at a 40-foot radius when the outriggers are not in use, and 30,000 pounds at 15-foot radius. An article indicating the scope of the work of erecting the lock machinery was published in THE CANAL RECORD of September 1.

Scrap Contractors at Work.

One of the sights of the Canal Zone is the discarded locomotives, cars, dredges, barges, boilers and miscellaneous junk which border the route of the Canal, flotsam from the wreck of the French efforts. A considerable part of this abandoned machinery has been renovated and put in use by the Americans. Up to January 1, 1911, 58,620,309 pounds of it had been shipped as scrap to buyers in the States; the value of this and of the machinery put in use by the Americans aggregates $2,112,063.00.

On September 5, 1911, bids were opened in Washington for the purchase of all the French scrap remaining on the Isthmus and not taken up on the property papers of the Commission and credited to the French scrap account. It was stipulated that three years should be allowed in which to remove all the material and that the Panama railroad should charge a flat rate of $2.25 a ton for hauling to seaports, loading to be done by the contractor. The successful bidder was the Chicago Housewrecking Company, which offered $215,000.

This firm has begun the work of removal and is employing on the Isthmus about fifty laborers under the direction of four white Americans. The work at present is preliminary, consisting of cleaning up the yard back of Dock 14 at Cristobal and in clearing the way to outlying collections of scrap along the line of the Panama railroad. Some of it is at considerable distance from the main line of the railroad, but in no case is it thought that the cost of removal will exceed the value.

A large amount of scrap has been dumped in the yard at Dock 14, where workmen are engaged in breaking it up and sorting it in piles, close to the wharf, according to the grade of metal. Dealers in scrap recognize about three hundred classifications of iron and steel. The representative of the Chicago Housewrecking Company says that practically every grade is to be found in the scrap which his men are sorting.

Within a short time the firm will have in use at Dock 14 two 20-ton locomotive cranes, one with a 50-foot boom, equipped with electric magnets capable of lifting 3 tons. It will have in addition a pair of power shears, capable of cutting through a bar of steel 6 inches square in cross-section. A great part of the metal will be cut into lengths of three feet, for convenience in melting. At present the machinery is broken to pieces by cutting the rivets with sledge and "cold-cut." Broken

NOTES OF PROGRESS.

(*Continued.*)

up and piled, the material will occupy about one twenty-fifth of the space taken up by the original machinery. It will be shipped direct to the foundries which buy it from the contractor.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 73 per cent completed, 165,273 cubic yards, out of a total of 225,000, having been placed at the close of work on December 16. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
December 11	118	7.00	2
December 12	176	7.30	2
December 13	212	12.30	2
December 14	216	8.45	2
December 15	168	8.00	2
December 16	198	12.00	2
Total	1088	55.45	2
Previously reported	164,185		
Grand total	165,273		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending December 16, follows:

Date.	Hours worked.	Cubic Yards.
December 11	3.50	1,910
December 12	3.03	1,557
December 13	3.09	1,539
December 14	3.24	1,562
December 15	4.34	1,865
December 16	4.53	2,220
Total	22.53	10,653

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending December 16, follows:

Date.	Hours worked.	Cubic Yards.
December 11	7.10	2,386
December 12	7.20	2,926
December 13	6.40	2,600
December 14	5.50	2,315
December 15	6.25	2,296
December 16	7.15	2,712
Total	40.40	15,235

Visit of Committee on Interstate and Foreign Commerce.

The following members of the House of Representatives Committee on Interstate and Foreign Commerce arrived on the *Cristobal* on December 18: Representatives W. C. Adamson of Georgia, chairman of the committee, A. J. Sabath of Illinois, T. W. Sims of Tennessee, C. W. Hamlin of Missouri, F. E Doremus of Michigan, J. H. Covington of Maryland, F. C. Stevens of Minnesota, E. L. Hamilton of Michigan, M. E. Driscoll of New York, J. J. Esch of Wisconsin, and Mr. W. J. Davis, clerk of the committee. Due to arrive on the *Panama* on December 20 are J. R. Knowland of California, John A. Martin of Colorado, S. W. Gould of Maine. The committee began its hearings at the Hotel Tivoli on the night of December 19.

Accompanying the members of the committee on the *Cristobal* were Representatives H. T. Rainey of Illinois and Mrs. Rainey, W. P. Borland of Missouri and Mrs. Borland, T. W. Hardwick of Georgia and Mrs. Hardwick, S. J. Tribble of Georgia and Mrs. Tribble, J. H. Stephens of Texas and Mrs. Stephens, J. C. McLoughlin of Michigan, and C. B. Miller of Minnestoa, and Mrs. Sabath, Mrs. Sims, Mrs. Hamlin, Mrs. Covington, Mrs. Doremus, Mrs. Stephens, Mrs. Hamilton, Mrs. Driscoll, Miss Rose, Miss Tribble, Miss Esch, Mr. and Mrs. Ralph Smith, Messrs. R. J. Spier, Charles F. Riddell, S. P. Gilbert, John Corrigan, H. Lutzenkircher, W. B. Fullerton.

In addition the members on the committee due to arrive on the *Panama* are Representatives W. D. Stephens of California, C. C. Bowman of Pennsylvania, and Mrs. Gould, Mrs. Knowland, Mrs. Martin and niece.

CONCRETE WORK IN THE LOCKS.

Over 74 per cent of the concrete for the locks is in place, the amount at the close of work on December 16, being 3,102,941 cubic yards, out of a total of approximately 4,199,400. A total of 25,574.5 cubic yards of concrete was laid in the locks during the week ending December 16.

GATUN LOCKS.

Over 87 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on December 16 being 1,746,964 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending December 16, and of the total, follows; and a similar statement for the work in the spillway of Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
December 11	1,808	30.52	6	508	6.00	2	6	2,406
December 12	1,538	24.00	6	512	6.40	2	....	2,079½
December 13	1,250	20.18	4	496	6.40	2	....	1,815
December 14	1,070	18.28	6	380	5.40	2	....	1,483
December 15	1,144	19.18	6	420	5.40	2	18	1,644½
December 16	1,328	22.10	8	350	4.40	2	2	1,738½
*Portable mixers	....	....	......	336.5	....	......	....	
Total	8,138	135.6	6	3,002.5	35.20	2	26	11,166½
Previously reported	....	....	......	....	....	......	....	1,735,797½
Grand total	....	....	......	....	....	......	....	1,746,964

The 336½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days; December 11th, 84; December 12th, 29½; December 13th, 69; December 14th, 33; December 15th, 62½; December 16th, 58½.

PEDRO MIGUEL LOCK.

Concrete work in the locks at Pedro Miguel is over 93 per cent completed, 784,362 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on December 16. The record for each of the six 8-hour working days of last week, follows:

Date.	Auxiliary Plant. 2-cubic yard mixers.			Auxiliary Plant. ½-cubic yard mixer.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
December 11	514	15.00	3	63	4.50	1	....	577
December 12	480	14.00	2	119	8.00	1	....	599
December 13	482	15.00	3	95	7.00	1	....	577
December 14	338	12.00	3	103	7.25	1	....	441
December 15	488	14.50	3	100	7.00	1	....	588
December 16	536	18.00	3	80	7.00	1	....	616
Totals	2,838	88.50	2.83	560	40.75	1	....	3,398
Previously reported	....	....	......	....	....	......	4,423	780,964
Grand totals	....	....	......	....	....	......	4,423	784,362

MIRAFLORES LOCKS.

Over 41 per cent of the concrete for the system of two twin locks at Miraflores was in place on December 16, the total amount on that date being 571,885 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Auxiliary Plant. ½-cubic yard mixers.				Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Dec. 11	1,142	43.17	7	422	8.90	2	202	15.75	3	....	1,766
Dec. 12	1,279	44.50	7	568	8.65	2	194	16.00	3	....	2,041
Dec. 13	1,546	43.08	7	516	7.33	2	74	6.00	1	....	2,136
Dec. 14	1,162	32.50	6	322	5.67	2	239	19.00	3	....	1,723
Dec. 15	1,210	29.95	6	462	7.10	2	254	21.00	4	....	1,926
Dec. 16	978	22.33	5	198	2.80	2	242	21.50	3	....	1,418
Totals	7,317	215.53	6.33	2,488	40.45	2	1,205	99.25	2.83	....	11,010
Previously reported	....	....	......	....	....	......	....	....	......	3,693	560,875
Grand totals	....	....	......	....	....	......	....	....	......	3,693	571,885

BASEBALL.

Officers and Schedule of The Panama Canal League.

The Panama Canal Baseball League has organized for the season of 1912 with the following officers: President, S. B. Williamson; vice-president, John Burke; secretary and treasurer, M. F. Hathaway; Executive Committee, Dr. J. C. Perry, chairman, E. J. Williams, J. W. Coffin.

Four teams have been organized and each will play 30 games according to the following schedule:

DATE.	ANCON.	EMPIRE.	COLON.
December 31, 1911	Ancon–Empire		Com. Sub.–Tenth Inf
January 1, 1912		Empire–Tenth Inf	Com. Sub.–Ancon
January 7	Ancon–Tenth Inf	Empire–Com. Sub	
January 14	Ancon–Tenth Inf		Com. Sub.–Empire
January 21		Empire–Ancon	Com. Sub.–Tenth Inf
January 28	Ancon–Com. Sub	Empire–Tenth Inf	
February 4	Ancon–Empire		Com. Sub.–Tenth Inf
February 11		Empire–Tenth Inf	Com. Sub.–Ancon
February 18	Ancon–Tenth Inf	Empire–Com. Sub	
February 22	Ancon–Tenth Inf		Com. Sub.–Empire
February 25		Empire–Ancon	Com. Sub.–Tenth Inf
March 3	Ancon–Com. Sub	Empire–Tenth Inf	
March 10	Ancon–Empire		Com. Sub.–Tenth Inf
March 17		Empire–Tenth Inf	Com. Sub.–Ancon
March 24	Ancon–Tenth Inf	Empire–Com. Sub	
March 31	Ancon–Tenth Inf		Com. Sub.–Empire
April 7		Empire–Ancon	Com. Sub.–Tenth Inf
April 14	Ancon–Com. Sub	Empire–Tenth Inf	
April 21	Ancon–Empire		Com. Sub.–Tenth Inf
April 28		Empire–Tenth Inf	Com Sub.–Ancon
May 5	Ancon–Tenth Inf	Empire–Com. Sub	
May 12	Ancon–Tenth Inf		Com. Sub.–Empire
May 19		Empire–Ancon	Com. Sub.–Tenth Inf
May 26	Ancon–Com. Sub	Empire–Tenth Inf	
May 30	Ancon–Empire		Com. Sub.–Tenth Inf
June 2		Empire–Tenth Inf	Com. Sub.–Ancon
June 9	Ancon–Tenth Inf	Empire–Com. Sub	
June 16	Ancon–Tenth Inf		Com. Sub.–Empire
June 23		Empire–Ancon	Com. Sub.–Tenth Inf
June 30	Ancon–Com. Sub	Empire–Tenth Inf	

Admission will be as heretofore, 25 cents for bleachers, 50 cents for grand stand, 75 cents for box seats.

CHRISTMAS SOCIAL EVENTS.

Religious and Secular Entertainment.

In practically every one of the Canal Zone villages Christmas will be celebrated socially. The following list is of the more noteworthy entertainments:

Union Churches—The Cristobal church will hold Christmas services as follows: On December 24, at 10 a. m., the Sunday school will celebrate with a Christmas program; at 7.45 p. m., there will be preaching services in the Commission clubhouse with a sermon on "The Meaning of Christmas" by the pastor, the Rev. Carl H. Elliott.

At Gatun the Sunday school will celebrate on December 24, in the chapel. There will be a tree, and suitable music will be sung, including a Christmas cantata.

The Christmas services will be held in the chapel on December 24. The subject of the morning sermon will be "The Significance of Christmas" and in the evening the subject will be "The Significance of Jesus." There will be special music at each service. The preacher for the day will be the Rev Mr. Purdy, chaplain to the Christian League.

At Culebra the Sunday school will celebrate on December 24, at 9.30 a. m. There will be a program in which the children will take part. The preaching service will be held on the evening of the same day. The Rev. A. A. Nellis will be the preacher.

The Sunday school at Las Cascadas will hold its Christmas celebration on Christmas Eve in the chapel. There will be a program in which the pupils of the school will take part, and a Christmas cantata will be sung.

The Song and Praise Association and Union Sunday School of Pedro Miguel will hold a Christmas entertainment on the evening of Saturday, December 23. A Christmas operetta will be sung by the children of the Sunday school.

The Corozal Sunday school will hold a Christmas celebration in the Commission clubhouse on Saturday evening, December 23, at 7.30 p. m. All residents of Corozal and Camp Diablo are invited to attend.

Methodist Episcopal Church—Bishop Frank M. Bristol will be the preacher at the Christmas service in the Methodist Church, Panama. The morning service will be at 10 o'clock and the evening service at 7, as usual. On Saturday evening, the three Sunday schools of the church, Old Balboa, East Balboa, and the school of the sea wall church, will unite in their Christmas celebration. A program of special music has been prepared, and there will be a tree and gifts for the children.

Protestant Episcopal—The Christmas service at St. Luke's Hospital chapel, Ancon, will be held on Sunday, December 24, at 10 a. m. There will be special music by the men's choir. On Christmas Day there will be a celebration of the Holy Communion at 9 a. m. The children's Christmas service will be held in the chapel on December 28 at 5.00 p. m.

At Christ Church By-The-Sea, Colon, there will be the usual services on Sunday, December 24, and a celebration of the Holy Communion at 12 midnight on Christmas eve. On Christmas Day there will be a celebration of the Holy Communion at 7.30 a. m., and a choral service at 10.30 a. m., a vesper service for children at 4 p. m., and solemn evensong at 7.30.

Protestant Episcopal (West Indian)—On December 24, there will be a service at Bas Obispo at 8 a. m., and on Christmas Day there will be a celebration of the Holy Communion at St. Andrews, Church, Empire, at 6 a. m., and a second service at 11 a. m.

Roman Catholic—At St. Ferdinand's, Empire, the Catholic Club of American men will make its corporate communion at the first mass on Christmas Eve, at 7.30 a. m.; there will be the usual mass at 9 a. m., the children's celebration, with tree and distribution of gifts in the parish house at 3 p. m., and solemn vespers at 7.30 p. m. On Christmas Day masses will be said at 7 and at 9 a. m. At Gorgona there will be mass at 7.30 a. m., and at Las Cascadas mass at 8.30 on Christmas Day.

There will be three masses said at the Roman Catholic chapel in Ancon Hospital Grounds, Sacred Heart, on Christmas Day, the first at 6 a. m., the second at about 7.30 a. m., and the last at 9 o'clock. There will be the usual services on Sunday, December 24.

The Christmas entertainment at Paraiso, under the auspices of the Paraiso Woman's Club will be in the chapel on Christmas Eve. The pupils of the Sunday School will assist with songs and recitations.

The Balboa Volunteer Fire Department will give a Chrsitmas dance in the old Balboa hotel, Saturday evening, December 23.

The community Christmas entertainment at Cristobal-Colon will be held in the clubhouse on Saturday evening, December 23. There will be a short program and a treat for the children. A special entertainment for the bachelors will follow at 9 o'clock. Residents are urged to bring gifts of toys, books, fruits or other articles for the children of Colon. These will be distributed in the city on Christmas Day by the Colon Humane Society.

The committee which is preparing a Christmas celebration for the inmates of the Canal Zone penitentiary earnestly solicits gifts for the Christmas dinner. Cakes, fruits, nuts, tobacco or donations of money will be forwarded through the District Quartermaster in any of the villages without cost to the donor. The committee is asking for donations of cakes from Ancon, Culebra, and Empire. The cakes should be forwarded through the District Quartermaster on Christmas Eve.

Obituary.

Edward Fredrick Treadwell, an employe of the Pacific Division, was killed on December 15, at the Pedro Miguel Locks by a falling stone. He was 24 years of age, born in Martha's Vineyard, Mass., single, and had been on the Isthmus about seven months. He is survived by his mother, Mrs. Elmer Treadwell, living at Los Angeles, California.

International Brotherhood of Electrical Workers.

The International Brotherhood of Electrical Workers, Local Union No. 677, will hold its regular meeting and election of officers on Wednesday, December 27, at Gatun lodge hall at 8 p. m. All members are requested to attend.

Contract For Clearing Trails.

Bids will be received by the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2:30 P.M., Saturday, December 23, 1911, at which time they will be opened in public, for the clearing of the following trails: Panama-Cruces, Corozal-Cruces, Pedro Miguel-Cruces, Empire-Cruces, Empire-Maria Eugenia, Arraijan-Rio Grande, Arraijan-Paraiso, and Arraijan-Cochinito. Work shall be done in accordance with specifications to be obtained upon application to the Superintendent of Public Works, Isthmian Canal Commission, Administration Building, Panama. Proposals may be made for clearing each trail separately, or for groups, or for the total. Successful bidders will be required to furnish a bond or make cash deposit in the sum of ten per cent of the amount bid as a guarantee that the work will be carried out. Proposals should be enclosed in a sealed envelope, marked "Proposal for Clearing Canal Zone Trails," and addressed to the undersigned. The Commission reserves the right to reject any or all bids, accept any bid or combination of bids, as may be deemed to its interest, and to waive defects and informalities in proposals.

C. NIXON,
Purchasing Agent on the Isthmus.

CANAL WORK IN NOVEMBER.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., December 15, 1911.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of November, 1911.

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	54,719	1,218,786	117,034	1,390,539
Work excavation, wet	Cubic yards	742,242	2,960	462,283	1,207,485
Total work excavation	Cubic yards	796,961	1,221,746	579,317	2,598,024
Plant excavation, dry	....	....	....	....	....
Plant excavation, wet	Cubic yards	....	....	1,893	1,898
Total Canal Excavation	Cubic yards	796,961	1,221,746	581,215	2,599,922
Material placed in dams	Cubic yards	473,760	....	49,760	523,520
Concrete placed in locks and dams	Cubic yards	46,324		61,348	107,672
Explosives used	Tons (Gross)	40.90	187.99	35.25	261.14
Rock drilled	Feet	50,662	379,167	84,966	532,795
Tracks removed	Miles	....	11.40	....	11.40
New tracks laid	Miles	2.00	24.41	4.15	30.56
Rock crushed	Cubic yards	43,193	....	60,430	103,623
Cement used	Barrels	54,096	52	63,657	117,805
New roads built	Miles	0.26	....	....	0.26
Water mains laid	Feet	859	580	1,497	2,936
Sewers laid	Feet	299	256	2,015	2,570
Open drains and ditches dug	Feet	59,643	42,983	9,150	111,776
Average daily force	....	7,280	8,547	5,367	21,914
Average rainfall	Inches	15.80	12.30	6.52	11.92

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the Division Engineers, the inspection being cared for by this subdivision. The field work consisted in preparing the valve chambers for the installation of the valves, which work is being done under supervision of this office. This subdivision is also charged with general inspection of the masonry work of all the locks.

LOCK GATES AND PROTECTIVE DEVICES.

Shop work in the United States—Up to November 20, a total of 39,812 tons of structural steel had been accepted at the rolling mills, or about 80 per cent of the total, of which 4,128 tons were rolled between October 20 and November 20, and a total of 23,311 tons of riveted structural material was shipped from Rankin shops, or about 46 per cent of the total contract weight. Of this last item, 3,037 tons were shipped between October 20 and November 20. In addition to this, a considerable tonnage of castings has been shipped; also about 20 per cent of the pipes for the pumping system, as well as the hand-railings for leaves Nos. 29 to 40 inclusive, 50 to 58 inclusive, and 52 to 65 inclusive.

Gatun Locks—The upper guard gates, 4 leaves, 54 feet 8 inches high, have been completed and practically all shipped. The upper gates and middle gates, upper lock, 8 leaves, 77 feet high, have been completed and practically all material for same has been shipped. The safety gates and lower gates, upper lock, 8 leaves, 77 feet high, have been practically completed and 95 per cent of same have been shipped. The middle and lower gates, middle lock, 8 leaves, 77 feet 10 inches high, have been 20 per cent completed at the shops, and 16 per cent of same has been shipped.

Pedro Miguel Lock—The upper guard gates, 4 leaves, 54 feet 8 inches high, have been completed and shipped. The upper and middle gates, 8 leaves, 79 feet high, have been practically completed and shipped. The safety and lower gates, 8 leaves, 79 feet high, have been 82 per cent completed and about 80 per cent shipped. Of the lower guard gates, 4 leaves, 47 feet 4 inches high, about 8 per cent has been completed and a small amount shipped.

Miraflores Locks—Practically none of this material has been manufactured or shipped.

LOCK GATE ERECTION.

Gatun—Upper guard gates, 54 feet 8 inches high, leaves 37, 38, 39, and 40. These leaves were practically erected and interior riveting was completed on October 1. The work on these leaves during the month of November consisted mainly of bolting up, reaming and riveting the sheathing. No reaction castings were attached. The total work, apart from riveting up some of the end plates and doing a little calking on same, consisted of riveting up the total of 22 panels of sheathing in all four leaves, as against 15 last month, the equivalent of about one upstream and one-half of the downstream face of one leaf. There remain to be riveted on these four leaves, about 45 panels of sheathing out of a total of 104.

Upper gates, 77 feet high, leaves 33, 34, 35, and 36: Twelve panels of skeleton were erected during the month and the same number riveted up. As to sheathing, 30 panels were erected, which is equivalent to a little over one leaf. None of these sheathing plates has as yet been riveted up, and only a part of same fully adjusted and reamed.

Pedro Miguel—Upper guard gates, 4 leaves, 54 feet 8 inches high: The skeleton was brought to the top in all leaves except No. 52, and most of the skeleton riveted up. Forty-one panels of sheathing were erected, equivalent to about one complete leaf and one-half of another leaf, although many of these sheathing plates were not fully fitted nor reamed. Six panels of sheathing in all were riveted up.

The total tonnage erected December 1, without regard to its being riveted or fully fitted, is about 3,500 tons, out of a total of about 58,000 tons or 6.1 per cent; the total number of field rivets driven about 177,000, out of about 6,500,000, or about 3 per cent of the total.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection as follows:

(1) *For the Stoney gate and cylindrical valve machines, purchased under Circular 614*—The first Stoney gate valve machine which was tested, was ordered shipped to the Isthmus, and the second machine was mounted for test.

(2) *For the rack railway and other material purchased under Circular 619, Circular 636-D and Circular 635*—For the different classes under these circulars which are now under contract, the state of completion of delivery varies from 6 to 50 per cent. On all portions of these contracts, satisfactory progress has been made during the month, with the exception of the carbon steel castings, (Class 2, Circular 619) which delivery is very much behind time.

(3) *For the gate operating machines, Class 1, and miter forcing machines, Class 2, purchased under Circular 627*—Satisfactory progress was made with the gate operating machine, but a second new main casting of the casing for the miter gate forcing machine was necessary.

(4) *For the gate and girder hoisting machinery for the emergency dams, purchased under Circular 616*—Tests are continuing upon the three types of worm gearing hoists to be tried out as a part of this contract, at the works of one of the sub-contractors, with a special view to determining the lubricant best suited for this heavy service.

The force installing machinery and electrical equipment on the Isthmus during the month placed hand rail and ladders for valves Nos. 260 and 261, and completed setting foundation bolts for miter gate machines Nos. 37 and 38. Cylindrical valve No. 558, was completed in place, except motor. Forms for decking over valve No. 558 are completed and ready for concrete. During the month 56 cubic yards of concrete were placed.

EMERGENCY DAMS.

The inspection work in the United States progressed satisfactorily during the month. Up to the 20th of the month a total of 288 drawings of the turning and wedging machinery had been approved; also a large number of drawings for vertical trusses of the same. At the works of the contractors, 817 tons of riveted nickel steel; 338 tons of riveted structural steel; 445 tons of carbon steel castings; 138 tons of carbon steel forgings; and about 260 tons of miscellaneous cast iron castings, vanadium gate wheels and vanadium steel castings, in all about 2,000 tons of material, have been fabricated. Satisfactory progress was also made on the roller bearings, all the roller bearings for one dam having been completed during the month.

AIDS TO NAVIGATION.

During the month 92 acres of land were cleared in the Gatun Lake section for sites for beacons and reference buoys, at an average cost of $15.59 per acre; 25,954 linear feet of trochas were cut; and the necessary land for making surveys was cleared and profile taken. Three buoys in the vicinity of Bohio, and three buoys at Pena Blanca were located and referenced during the month; and test holes were drilled to determine formation on the site of the front tower of Range No. 5-6, Atlantic Division.

Range No. 9-11—Work on the construction of Range 9-11, Pacific Division, continued during the month; the concrete entrance stair of the rear tower having been placed in position. The newel post of this tower was completed to a height of 16 feet, and the tower walls were given one coat of cement wash inside and outside. The front tower was also given one coat of cement wash on both the inside and the outside. The rip-rap at the base of caisson foundation pier was placed in position.

Range No. 13-14—The 29 bearing piles for the foundation of the front tower of range 13-14, were driven to depths from 18 to 25 feet; excavation to a depth of about 6 feet below the surface and work of armoring the piles is under way. The wooden forms for the foundation pier were constructed and considerable rock and sand has been delivered at the site of this tower. The excavation for the foundation of the rear tower was completed, 1,400 feet of Decauville track was laid from the shore to the site of the tower, and most of the building material delivered at the site.

Range No. 1-2—The foundation for the front tower was completed. The foundation for the rear tower was also completed, and the walls of the tower carried up to a height of 12 feet above grade line.

The steel forms for the Gatun Lake range towers were completed, and are to be delivered at Tabernilla dumps, where the first set of range towers in the Gatun Lake section will be erected.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month one shovel was engaged on borrow pit excavation for the locks backfill, 36,024 cubic yards of material being removed.

Backfill—Backfill behind the side walls of the upper, middle and lower locks, and in the center wall of the upper lock, was continued. The quantity placed during the month aggregated 95,476 cubic yards, increasing the total to 1,008,942 cubic yards. On November 30 the backfilling was 64.67 per cent completed.

Receiving and Issuing Material—The unloading of sand was discontinued November 17. The receipts of rock exceeded the consumption by 4,574 cubic yards, and the consumption of cement exceeded the receipts by 13,405 barrels.

Mixing and Placing Plants—Both plants, and all portable mixers, were kept in satisfactory operation during the month.

Power Plant and Pumps—The operation of the power plant and pumps was satisfactory.

Iron and Steel Work—During the month 426.7 tons of fixed steel and 85,438 feet of reenforcing rods were placed; 37.8 tons of reenforcing rails and 33.2 tons of electric return track were laid.

Concrete Work—There was a decrease of 9,729 cubic yards in the amount of concrete laid as compared with the figures for the preceding month. The daily average for the 24 working days was 1,829 cubic yards, as compared with daily average during October of 2,063 cubic yards. The total amount of concrete placed during the month was 43,907 cubic yards, including 1,014 cubic yards of large stone. The bucket measurement exceeded the place measurement by 165.5 cubic yards. Of the total concrete, 4,782 cubic yards were placed in the upper lock, 5,963 cubic yards in the middle lock, and 33,162 cubic yards in the lower lock. The concrete work for the entire lock system was 85.88 per cent completed at the end of November.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS.

	Permanent Plant.	Auxiliary Plant.
Length of working day (bours)..	11.31	8.50
Average number of hours per day worked, per strand of cableway laying concrete and large stone (actual working time)	5.33	....
Average number of mixers per day	6.00	2.00
Average hourly output per mixer (actual working time), cu. yds.	57.20	88.45
Average amount of concrete and large stone laid per hour, per strand of cableway (actual working time) cu. yds.	30.73	....
Large stone laid, cu. yds	1,014	....
Concrete laid, cableways, cu.yds	31,684	....
Concrete laid, through chute into dump cars, and by crane cu. yds.	1,354	....
Concrete laid, derricks, cu. yds..	....	1,392
Concrete laid, dump cars, cu. yds	....	7,340
Concrete laid, portable mixers...	....	1,288.5
Total amount of concrete and large stone laid, cu. yds..	34,052	10,020.5

GATUN DAM.

Construction during the month increased the total fill, as determined by cross sections of the material in place, by 473,760 cubic yards, making the total amount in place 16,674,512 cubic yards.

Hydraulic Fill—The dredges increased the hydraulic fill by 266,603 cubic yards. The total hydraulic fill in place on November 30 was 8,739,089 cubic yards.

Dry Fill—The material received from the Central Division, Mindi, and steam shovels Nos. 116 and 134, amounting to 207,157 cubic yards, was placed on the north and south toes of the dam, east and west of the spillway, making the total dry fill in place 7,935,423 cubic yards.

GATUN SPILLWAY.

Excavation—This work was not extended during the month.

Backfill—During the month 2,951 cubic yards of material were used in backfilling behind the west wall of the spillway.

Concrete—The work of placing concrete was continued. The amount placed during the month aggregated 2,417 cubic yards, which increased the total to 164,956 cubic yards. The concrete work for the spillway was 73.3 per cent completed.

HARBOR AND CHANNEL SECTION.

Excavation Below Sealevel at Mindi—During the month two steam shovels removed 3,590 cubic yards of earth and 51,129 cubic yards of rock from the canal prism.

Dredging from Ocean to Mindi—Six dredges removed 703,262 cubic yards of earth and 38,980 cubic yards of rock from the canal prism. On November 30th, 40 feet of water could be carried from zero to zero plus 1,900 feet; 35 feet to mile 3 plus 2,600 feet; 30 feet to mile 3 plus 3,700 feet; 20 feet to mile 5 plus 2,438.9 feet, the point of intersection with the French Canal. In addition to the above, the dredge *Caribbean* removed 9,685 cubic yards of earth from the approach channel to Cristobal docks.

PORTO BELLO.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day, hours............	8.00
Average number of hours worked per day..	4.16
Average number of cubic yards per hour of workingday..........................	224.96
Average number of cubic yards per working hour..............................	432.94
Maximum day's output (5 hours) cu. yds..	2,194.00
Average day's output (24 days) cu. yds....	1,799.71
Average hourly output (163 hours 55 minutes) cu. yds..........................	260.33
Total output for the month, cu. yds......	43,193.00

SAND, STONE, AND CEMENT SERVICE.

In connection with this service plant steamed 5,720 miles, handled 592 barges, and carried 1,730 passengers.

WEST BREAKWATER, COLON.

Seventeen thousand, two hundred and forty-nine cubic yards of material were excavated, all of which was dumped from the trestle. The double track trestle was extended 551 linear feet. On November 30 the trestle extended 8,018 feet from shore. During the month 4,117 cubic yards of Porto Bello rock were placed on the breakwater, making a total of 10,929 cubic yards used for that purpose to December 1. The total amount of rock dredged and dumped on the west breakwater to November 1, 1911, was 762,217 cubic yards. During the month 38,980 cubic yards of rock were dredged and dumped, increasing the total to 801,197 cubic yards. The amount of dry fill placed to December 1 was 523,904 cubic yards.

NOMBRE DE DIOS.

During the month 41 barges, containing 19,948 cubic yards of sand, were shipped to Gatun. Operations at Nombre de Dios were discontinued on November 17, and all plant and material transferred to Cristobal.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Central Division.

During the month of November the total amount of material excavated in the Central Division was 1,224,796 cubic yards, of which 126,487 cubic yards were classified as earth and 1,098,309 cubic yards as rock. Of this quantity, 1,212,548 cubic yards were removed by steamshovels, and contractors removed 2,960 cubic yards by sluicing and 9,288 cubic yards by hand. Of the total, 1,221,746 cubic yards consisted of primary excavation for the canal prism, and 3,056 cubic yards were excavation for tracks outside of prism.

The daily average number of steamshovels at work during the month was 41.54, and the total number of shovel days was 997, as compared with 41.46 at work during the month of October, with 1,078 shovel days.

For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by sbovels.	Classification of material.		Av. No. of shovels at work	W'kg days	Av. yards per shovel day.
		Rock.	Earth.			
1910:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
Nov....	1,444 567	1,053,077	391,490	49.13	24	1,225.20
1911:						
Nov. ..	1,212 548	1,089,021	123,527	41.54	24	1,216.19

Rainfall at Empire: 1910, 8.85 ins.: 1911, 11.73 ins.

The above table shows the average output per shovel to be 0.73 per cent greater in November, 1910, than in the corresponding month of the present year.

The total amount of material excavated from the prism in the Culebra Section of the Central Division in November, 1911, 1,209,498 cubic yards, was the highest record in that section for the month of November, except November, 1910, when 1,209,554 cubic yards were removed.

The total estimated amount of material to be removed in the Central Division, according to the revised estimate of July 1, 1911, was 101,801,296 cubic yards, and up to December 1, 1911, 84,065,024 cubic yards had been removed, leaving 17,736,272 cubic yards to be removed in order to complete all excavation in the Central Division. From these figures it will be seen that 82.58 per cent of all excavation in the Central Division had been completed up to the close of the month of November, and 17.42 per cent remained uncompleted.

Considering the two sections which compose the Central Division, the excavation completed and that to be completed at the close of November operations was as follows:

CULEBRA SECTION.	Cu. Yds.
Completed	72,151,742
To be completed	17,292,263

CHAGRES SECTION.	Cu. Yds.
Completed	11,913,282
To be completed	444,009

From the above figures it will be seen that the Culebra Section, locally known as the "Culebra Cut," was 80.67 per cent completed, with 19.33 per cent to be completed; the Chagres Section was 96.41 per cent completed, with 3.59 per cent to be completed.

During the month 32,569 cubic yards of material were hauled from the canal prism and dumped in the embankment for the roadbed of the relocated Panama Railroad. The total amount of spoil from the Central Division used for this purpose at the close of the month was 3,995,376 cubic yards. The Central Division also delivered at Gatun 184,681 cubic yards of rock and earth for use in the construction of the dam, making the total for this purpose at the end of November 4,854,299 cubic yards. During the month 4,243 cubic yards of rock and earth were furnished for the Colon breakwater.

The daily average number of laborers at work on the whole Division during the month was 7,750, and the daily average number of gold employes was 797.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

Excavation—The total excavation during the month amounted to 117,034 cubic yards, of which 23,524 cubic yards were classified as earth, and 93,510 cubic yards as rock.

Filling and Embankment—During November, 3,190 cubic yards of dry filling were added to the prism of the west dam at Pedro Miguel, increasing the total amount of material in place at the close of the month to 311,571 cubic yards. The backfill at Pedro Miguel was increased by 33,988 cubic yards, the total in place at the end of the month amounting to 437,288 cubic yards.

At Miraflores, 31,800 cubic yards were added to the dry fill in the toes, and 14,770 cubic yards to the hydraulic fill in the core of the west dam, making the totals at the end of the month 1,046,647 cubic yards and 661,048 cubic yards respectively. The backfill was increased by 42,200 cubic yards, the total aggregating 277,588 cubic yards at the end of the month.

PEDRO MIGUEL LOCKS.

The general backfilling of the lock walls was continued. One steamshovel commenced excavating material from the hill back of the east lock wall, casting over spoil to be used for backfill. The filling-in of the center wall with sand and screenings was continued. The amount of iron placed in the masonry aggregated 249,691 pounds.

Concrete Work—The total amount of concrete and large stone laid at Pedro Miguel was 19,622 cubic yards, as compared with 25,637 cubic yards during October. The concrete was placed as follows: 10,212 cubic yards in the east wall; 5,314 cubic yards in the center wall; 2,284 cubic yards in the west wall; 580 cubic yards in the floors; 546 cubic yards in the north center guide wall; 496 cubic yards in the southeast wing wall; and 190 cubic yards in the northwest wing wall.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT PEDRO MIGUEL.

Permanent plant consisted of two chamber cranes, placing.

Auxiliary plant consisted of three 2-cubic yard and four ½-cubic yard mixers. Auxiliary placing plant consisted of a daily average of 2.33 ½-cubic yard mixers discharging directly into forms and a daily average of 3.54 locomotive cranes or derricks,

85 cubic yards of concrete were mixed and delivered to the lock gate contractors.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	5.18	4.22
Average number of mixers per day	....	5.91
	Cu. Yds.	Cu. Yds.
Average hourly output per mixer (actual working time)	....	18.48
Average amount of concrete and large stone laid per hour, per chamber crane (actual working time)	48.33	....
Large stone laid	....	....
Concrete laid	6,009.00	13.613.00
Total concrete laid	6,009.00	13,613.00

MIRAFLORES LOCKS.

Dry excavation was continued in the lower lock, eight steam shovels being employed. Excavation for the culvert system, and the placing of concrete in the east wall of the lower lock were commenced during the month. The backfilling of the east and west lock walls, also filling on the east and west toes of the west dam were continued. The sinking of the foundation caissons for the north center guide wall, and the construction of concrete caisson cylinders were continued. During the month the amount of iron placed aggregated 733,780 pounds.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	5.63	6.68
Average number of mixers per day	6.79	5.21
	Cu. Yds.	Cu. Yds.
Average hourly output per mixer (actual working time)	29.02	28.96
Average amount of concrete and large stone laid per hour, per berm, or chamber crane (actual working time)	44.30	....
Large stone laid	....	....
Concrete laid	19,143.00	22,583
Total concrete laid	19,143.00	22,583

Permanent plant consisted of 4 berm and 2 chamber cranes.

Auxiliary plant consisted of two 2-cubic yard mixers and a daily average of 3.33 ½-cubic yard mixers, and a daily average of .54 derricks.

Concrete Work—The total amount of concrete and large stone laid at Miraflores was 41,726 cubic yards, as compared with 60,873 cubic yards during October. The concrete was placed as follows: 7,593 cubic yards in the east wall; 11,665 cubic yards in the west wall; 20,537 cubic yards in the center wall; 1,810 cubic yards in the floors; and 121 cubic yards in the north center guide wall.

DISTRICT NO. 2—DREDGING.

The following is the statement of the output of the five dredges which were in operation during the month, and of the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.		PLANT.		Total.	Remarks.
		Earth.	Rock.	Earth.	Rock.		
		Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	Cu. Yds.	
Cardenas	Dipper	15,803	22,741	....	....	38,544	Place measurement
Marmot	Ladder	33,418	6,684	....	....	40,102	Place measurement
Badger	Ladder	116,194	....	....	....	116,194	Scow measurement
Mole	Ladder	2,800	4,550	....	....	7,350	Scow measurement
Culebra	Suction	209,530	....	1,898	....	211,428	Scow measurement
Total	....	377,745	33,975	1,893	....	413,618	
Hydraulic excavation	....	*50,563	....	....	....	50,563	Place measurement
Grand Total	....	428,308	33,975	1,898	....	464,181	

*Excavated from Canal prism, south of Miraflores lock site.

CHAMÉ SAND EXCAVATION.

Approximately 35,803 cubic yards of sand were excavated at Punta Chame and delivered at Balboa.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended as requred to facilitate construction work.

Work was continued on the Panama street improvements.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours)	8.00
Average number of hours per day (actual working time)	7.08
Average number of cubic yards crushed per hour of working day	297.76
Average number of cubic yards crushed per working hour	355.47
Total output for the month, cubic yards	60,430.00

Relocation of Panama Railroad.

During the month 322,021 cubic yards of material were excavated, increasing the total excavation at the close of the month to 9,276,059 cubic yards, and 350,201 cubic yards of material were placed in embankment, increasing the total for this purpose to 15,161,518 cubic yards.

The average daily number of steamshovels at work was 10.79, and the total number of working days was 24.

For comparison with the work done by steamshovels during the preceding month, and during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'k'g days.	Av. yards per shovel day.
		Rock.	Earth.			
1910:	Cu. Yds.	Cu. Yds.	Cu. Yds.			C. Y.
Nov.	227,510	125,265	102,245	6.00	26	1,580
1911:						
Oct.	367,085	229,865	137,220	10.38	26	1,360
Nov.	316,010	223,155	92,855	10 79	24	1,220

No temporary trestle was driven during the month. Work on bridges and culverts was continued. Three thousand four hundred and fifty-five feet of 70-pound track were relaid with 90-pound track, the total of 70-pound and 90-pound track at the end of the month being 131,145 feet and 46,008 feet respectively. The force averaged 2,456 men.

Quartermaster's Department.

LABOR.

The labor situation continued satisfactory.

QUARTERS.

The removal of families from the Tabernilla District continued, and at the end of the month there remained 30 families in quarters in that district.

BUILDING CONSTRUCTION.

An additional sum of $25,000.00 was allotted by the War Department for the construction of quarters for the 10th Regiment U. S. Infantry. It is intended to move two type-18's, two type-5's, and the hotel from the San Pablo-Tabernilla District. Work was started on the removal of one-type 5, one type-18, and the hotel.

MATERIAL AND SUPPLIES.

The value of material received from the United States during the month was $494,-152.20. Supplies during the month were delivered by 31 steamers, the total weight of cargo aggregating 23,264 tons, exclusive of 754,154 feet B. M. yellow pine lumber, 397,-164 feet B. M. Douglas fir lumber, 66,206 feet B. M. white oak lumber, 2,026 pieces of piling, and 48,158 cross ties.

Subsistence Department.

The operation of the European laborers' messes, the colored laborers' kitchens and the line hotels showed a net profit of $1,103.53. The operation of the Hotel Tivoli showed a net profit of $2,682.78, and there was a net profit on restaurants, penitentiary, tugs and dredges of $29.09. The net profit on subsistence operations was $3,815.40.

Department of Civil Administration.

COURTS.

During the month one civil and two criminal cases were disposed of in the Supreme Court, 15 civil and 71 criminal cases in the Circuit Courts, and 182 civil and 526 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for November amounted to $486,993.73, and the fees to $2,303.24. Receipts from stamp and card sales, and newspaper postage aggregated $6,880.26. The total collection of revenues made by the Division was $15,578.92, and the collection on account of court fines, costs, and fees, $3,246.20.

Thirty vessels entered at and thirty vessels cleared from the port of Ancon, and nineteen vessels entered at and eighteen vessels cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 536, of whom 495 were men and 41 women. Twenty nations, or 42 separate states and dependencies, were represented. The total number of arrests for the month was a decrease of 93 as compared with the month of October. Eighteen convicts were committed to the penitentiary, and 11 were discharged, leaving 143 in confinement at the close of the month. The cost of guarding and subsisting the convicts was $2,943.66, and the value of their work on Canal Zone roads $2,158.10.

DIVISION OF FIRE PROTECTION.

Ten fires were reported in the Canal Zone during the month, as compared with 7 in October. The damage to Commission property was $51.80, and to private property $2.50.

DIVISION OF PUBLIC WORKS.

In the city of Panama the average daily consumption of water was 1,406,599 gallons, and in Colon, 968,384 gallons.

The usual inspection and maintenance work of this division was performed during the month.

DIVISION OF SCHOOLS.

A new white school at Porto Bello was opened on November 6, with an attendance of 14 pupils. The new colored school building at Ancon was opened on November 27, with an attendance of 47 pupils. The total enrollment in the white schools during the month was 1,262, and the average daily attendance 1,012.8, or 80 per cent of the enrollment; and in the colored schools the total enrollment was 1,093, and the average daily attendance 687.8 or 63 per cent. Forty-five white and 26 colored teachers were employed in the division on November 30.

Department of Sanitation.

The total number of deaths from all causes among employes was 41. These were divided as follows: From disease, 33, and from violence, 8, giving the annual average per thousand of 7.85 and 1.90 respectively.

The annual average death rate per thousand among employes for the month of November in previous years since American occupation was as follows:

1904	14.47
1905	38.09
1906	30.61
1907	20.66
1908	11.50
1909	15.27
1910	14.92

The annual average death rate per thousand in the cities of Panama, Colon, and the Canal Zone, including both employes and non-employes, was 20.29.

The annual average death rate per thousand for the month of November among the same class of population for previous years was as follows:

1904	34.31
1905	58.00
1906	35.76
1907	28.86
1908	23.71
1909	19.14
1910	25.21

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was for whites, 6.62, blacks, 8.27, giving a general average of 7.85. For the same month during 1909, the annual average death rate per thousand from diseases was, whites, 5.88, blacks, 11.31, giving a general average of 10.26, and for the same month during 1910, whites, 5.55, blacks, 12.59, giving a general average of 10.69.

Among employes during the month deaths from the principal diseases were as follows: Amoebic abscess of liver, 1; chronic nephritis, 1; dysentery, clinical, 1; haemoglobinuric fever, 2; lobar pnemuonia, 11; malaria fever, E. A., 3; tuberculosis, disseminated, 4, leaving a balance of 10 deaths from all other diseases, and 8 deaths from external violence.

No cases of yellow fever, small pox, or plague originated on or were brought to the Isthmus during the month.

Respectfully,
Geo. W. Goethals, *Chairman.*

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Las Cascadas, C. Z., Sunday, December 24, 1911, at 6 p. m.

The next concert will be given at Corozal, December 31, 1911, at 7.30 p. m.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The standing of the teams in the Isthmian Basket Ball League on December 16, was as follows:

Team.	Won.	Lost.	P.C.
Cristobal	9	0	1.000
Gatun	7	3	.700
Culebra	5	4	.556
Gorgona	5	4	.556
Corozal	1	8	.111
Empire	1	9	.100

Following is the moving picture schedule for the week December 25 to 30: Monday, Gorgona: Tuesday, Gatun; Wednesday, Cristobal; Thursday, Culebra; Friday, Empire; Saturday, Corozal.

CULEBRA.

The basket ball game between Gorgona that was scheduled for Friday night, was postponed to Tuesday evening, December 19, 1911.

The billiard tournament closed on Saturday evening with the following results:

Name.	Handicap.	Won.	Lost.
Tragsforf	100	9	2
Dubois	90	9	2
Vogel	100	8	3
Hepler	75	7	4
McCann	65	7	4
Peters	50	6	5
Byer	75	5	6
Conlon	100	5	6
Janney	65	4	7
Thomson	90	3	8
Herz	65	2	9
Case	65	1	10

The tie between Tragsdorf and Dubois will be played during the week, which will decide who is entitled to the medal.

The Christmas exercises will be held at the clubhouse on Saturday evening. The Sunday school children will give an entertainemnt.

EMPIRE.

The Cristobal duck pin bowlers took four out of six of the match games bowled on Saturday, December 16.

Those who wish to enter the New Year's duck pin tournament to be held at Cristobal are requested to leave their names at the desk.

Eighteen men have entered the handicap pool tournament which started on December 13.

The standing of those who have played games in the chess tournament is as follows:

Name.	Won.	Lost.
Pulsifer	4	0
McCullough	2	0
Sherfey	3	3
Newbold	0	1
Warr	0	2

New books for the library will be ordered soon. Anyone having names to suggest will please leave them at the desk.

GATUN.

"Qualities That Make a Man" was the subject of an address given before the Drop-in-Discussion Club by J. Dwight Safford, Secretary of the Y. M. C. A. at Camp Elliott, on Sunday evening at 6 o'clock. Twenty-nine men were present.

The following new gymnasium equipment was added last week: German horse, climbing rope and large punching bag platform.

The local handicap pool tournament will close on Saturday night, December 23. Messrs. Hughes, Miller, Bailey and Shailer are now tied for first place. Mr. Hughes leads for the prize of a cue for high run with 26 balls to his credit. The second place is being contested between Harold and Lenow. There will also be a booby prize.

A rag time duck pin tournament was started on December 14.

CRISTOBAL.

At the session of the Debating Club on December 13 it was unanimously voted to omit the regular sessions scheduled for December 27 and January 3, respectively, because of the holiday season.

On Tuesday evening, December 19, there will be another chess fest. A series of progressive chess will be played, entry being free and open to all members.

On Thursday, December 21, a series of progressive checkers will be played under the auspices of the Checker Club. Entries will be free and open to all members.

On Monday evening, December 25, there will be a free concert in the Auditorium by the 10th Infantry Band from Las Cascadas. The public is invited to attend.

The plan is under consideration for the organization of a Spanish class in the near future. Should a registration of 15 names be secured, the class will be formed. Terms, $2.50 in advance for 10 lessons. Any one desiring to attend will please make that desire known at the office as soon as possible.

On Monday, January 2, the Isthmian duck pin tournament will occupy the local alleys for the day.

OFFICIAL CIRCULARS.

Christmas and New Year's Days.

CULEBRA, C. Z., December 12, 1911.

CIRCULAR No. 424.

Christmas Day, December 25, 1911, and New Year's Day, January 1, 1912, will be observed as holidays in the Canal Zone, and, as far as practicable, all public business will be suspended on those days.

GEO. W. GOETHALS, *Chairman.*

Workmanship and General Conduct on Termination of Service Forms.

CULEBRA, C. Z., December 13, 1911.

CIRCULAR No. 309-A.

The form on which the termination of service of employes on the gold roll is reported to this office requires that general workmanship and general conduct must be described as excellent, good, indifferent, or poor.

Hereafter the re-employment of any employe whose service is terminated with a record of indifferent or poor general workmanship or general conduct, or who is discharged for cause, will not be authorized.

Care should be exercised in the use of the term *general* workmanship and conduct.

Cases presenting special or unusual features will be decided upon their merits by this office.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Acting Assistant Engineer in Charge of the Third Division.

CULEBRA, C. Z., December 12, 1911.

CIRCULAR No. 425.

Effective this date, Mr. Guy O. Fraser, Junior Engineer, will be in charge of the work of the Third Division of the Office of the Chief Engineer during the absence of Mr. C. M. Saville, Assistant Engineer, on leave.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Grass Cutting by the Quartermaster's Department.

CULEBRA, C. Z., December 1, 1911.

CIRCULAR No. 183-F-4.

Effective this date the following regulations will govern the performance by the Quartermaster's Department for the Department of Sanitation on the Isthmus of the work covered thereby:

GRASS CUTTING.

1. All grass cutting on new areas which have not previously been cut, or areas that have not been cut by the Sanitary Department within two years, if they exceed two acres in extent, will be requested on form C. E. 159, and forwarded by the Chief Sanitary Officer for approval by the Chairman before this work is commenced.

2. All other requests for grass cutting in each district will be submitted to the District Quartermaster by the Sanitary Inspector on Monday morning of each week. Such work requests will indicate the area number on the work request, this area number to correspond with the area number on the map. Should only part of an area need cutting, this part will be designated on work request by area number and specified as north, east, south, or west portion. The particular portion of the area will be designated on the ground by stakes placed by the Sanitary Inspector.

3. The unit of measurement will be the square yard. All work requests will state the number of square yards and estimated cost.

4. District Sanitary Inspectors should indicate on work requests, when practicable, whether the work is to be done by horse mower or scythemen.

5. Execution slip on work requests will be sent to the District Sanitary Inspector by the District Quartermaster, immediately on completion of the work, and the District Sanitary Inspector shall inspect the work and sign the execution slip if the work has been satisfactorily performed. If not, he shall return the execution slip with written memorandum to the District Quartermaster, stating wherein the work is unsatisfactory.

6. In cases where the District Quartermaster and the Sanitary Inspector cannot adjust any differences, they will at once refer the matter to the heads of their respective departments, and take no further action, pending instructions from the heads of their departments.

METHODS OF ACCOMPLISHING THE WORK.

7. All grass cutting, wherever practicable, will be done with horse mowers, and raked with horse rakes. Where this is not practicable, it will be cut with scythes, and by machetes when mowers and scythes cannot be used.

8. Grass will be disposed of in the most economical manner. It will be burned whenever practicable.

9. Grass cut in water or on wet land should be removed to dry land on the day it is cut, whenever possible.

10. All grass cut along sides of ditches and falling into the ditches shall be removed as soon as possible.

MISCELLANEOUS.

11. District Sanitary Inspectors shall submit requests to District Quartermasters for repairs to screening and rendering houses mosquito proof, on Monday of each week. Work requests will specify house number, location, and nature of repairs required.

12. Sanitary Inspectors will on Wednesday of each week go through all places mentioned in work requests with the District Quartermaster, or employe designated by him, and point out defects mentioned in the work requests.

13. District Quartermasters will, on request of District Sanitary Inspectors, collect and destroy in manner indicated by the latter, all cans, bottles, and other breakable containers. The cost of this work will be reported separately from the cost of the grass cutting and garbage removal.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Assistant Chief Sanitary Officer.

ANCON, C. Z., December 19, 1911.

SPECIAL ORDER:

During the absence on leave of Lieut.-Col. John L. Phillips, Assistant Chief Sanitary Officer, Dr. M. E. Connor is assigned as Acting Assistant Chief Sanitary Officer, and as such, in accordance with paragraph 2, minutes of the 119th meeting of the Isthmian Canal Commission, held in Washington, D. C., January 12, 1907, is authorized to approve for payment all vouchers, payrolls, and public bills relating to this Department "By direction of the Chief Sanitary Officer."

W. C. GORGAS, *Chief Sanitary Officer.*

Employes' Twenty-four Trip Tickets.

CULEBRA, C. Z., December 13, 1911.

HEADS OF DEPARTMENTS AND DIVISIONS:

A supply of blank Employes' Twenty-four Trip Tickets for 1912 is being forwarded to you today under separate cover.

The rules governing the issuance and use of these tickets, as set forth in circular from this office dated December 16, 1910, will be followed for the ensuing year.

Through an error on the part of the printer in reading copy the instructions appearing on the 1912 ticket require the employe to sign coupons in the presence of the conductor. This requirement was discontinued some time ago, and employes will continue to fill out and sign coupons before entering train, to facilitate the collection of transportation. Please bulletin this fact throughout your division in order that there may be no misunderstanding.

By direction of the Chairman.

Respectfully,
C. A. MCILVAINE, *Chief Clerk.*

Care in Use of Water.

CULEBRA, C. Z., December 18, 1911.

CIRCULAR No. 365-B-:

A necessity exists for restricting the use of water from the reservoirs in the Canal Zone during the dry season.

The use of garden or other hose for watering plants and flowers is prohibited except by authorized gardeners and employes of the Quartermaster's Department.

District Quartermasters are directed to report all leaks in faucets or pipes and all violations of this order.

GEO. W. GOETHALS, *Chairman.*

Notice to Ship Masters.

BALBOA, C. Z., December 16, 1911.

An obstruction buoy has been placed in the center of the channel, a short distance south of Panama Railroad Pier, and you are hereby notified that it is not considered safe to pass to the eastward of this buoy when drawing more than 20 feet and at the extreme low tide. Should it be necessary to enter or depart on a deeper draft than 20 feet, vessels should pass to the westward of the buoy.

J. ST. C. HUNT,
Port Captain.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending December 27, 1911, (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
December 21....	......	4.08	10.23	4.42	10.43
December 22....	......	4.43	11.00	5.15	11.20
December 23....	......	5.17	11.37	5.47	11.55
			P.M.		
December 24....	......	5.52	12.12	6.20	......
December 25....	12.23	6.25	12.48	6.55	......
December 26....	1.12	7.03	1.28	7.35	......
December 27....	1.55	7.45	2.08	8.17	......

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Allianca	P.R.R.	Wednesday	Dec. 20
Colon	P.R.R.	Wednesday	Dec. 27
Advance	P. R. R.	Tuesday	Jan. 2
Panama	P. R. R.	Tuesday	Jan. 9
Allianca	P. R. R.	Monday	Jan. 15
Colon	P. R. R.	Monday	Jan. 22
Advance	P. R. R.	Saturday	Jan. 27
Panama	P. R. R.	Saturday	Feb. 3
Allianca	P. R. R.	Friday	Feb. 9
Colon	P. R. R.	Friday	Feb. 16
Advance	P. R. R.	Friday	Feb. 23
Panama	P. R. R.	Thursday	Feb. 29

CRISTOBAL TO NEW YORK.

Advance	P.R.R.	Wednesday	Dec. 20
Panama	P.R.R.	Wednesday	Dec. 27
Allianca	P. R. R.	Tuesday	Jan. 2
Colon	P. R. R.	Tuesday	Jan. 9
Advance	P. R. R.	Monday	Jan. 15
Panama	P. R. R.	Sunday	Jan. 21
Allianca	P. R. R.	Sunday	Jan. 28
Colon	P. R. R.	Saturday	Feb. 3
Advance	P. R. R.	Friday	Feb. 9
Panama	P. R. R.	Friday	Feb. 16
Allianca	P. R. R.	Thursday	Feb. 22
Colon	P. R. R.	Thursday	Feb. 29
Advance	P. R.R.	Wednesday	Mar. 6
Panama	P. R. R.	Wednesday	Mar. 13

NEW YORK TO COLON.

Prinz Eitel Friedrich	H.-A.	Saturday	Dec. 16
Santa Marta	U. F. C.	Thursday	Dec. 21
Prinz Sigismund	H.-A.	Friday	Dec. 22
Clyde	R. M.	Saturday	Dec. 23
Metapan	U. F. C.	Thursday	Dec. 28
Prinz August Wilhelm	H.-A.	Saturday	Dec. 30
Zacapa	U. F. C.	Thursday	Jan. 4
Sibiria	H.-A.	Friday	Jan. 5
Thames	R. M.	Saturday	Jan. 6
Almirante	U. F. C.	Thursday	Jan. 11
Prinz Eitel Friedrich	H.-A.	Saturday	Jan. 13
Santa Marta	U. F. C.	Thursday	Jan. 18
Prinz Sigismund	H.-A.	Friday	Jan. 19
Trent	R. M.	Saturday	Jan. 20
Metapan	U. F. C.	Thursday	Jan. 25
Prinz August Wilhelm	H.-A.	Saturday	Jan. 27
Zacapa	U. F. C.	Thursday	Feb. 1
Altai	H.-A.	Friday	Feb. 2
Oruba	R. M.	Saturday	Feb. 3

COLON TO NEW YORK.

Zacapa	U. F. C.	Thursday	Dec. 21
Altai	H.-A.	Saturday	Dec. 23
Thames	R. M.	Tuesday	Dec. 26
Almirante	U. F. C.	Thursday	Dec. 28
Prinz Eitel Friedrich	H.-A.	Tuesday	Jan. 2
Santa Marta	U. F. C.	Thursday	Jan. 4
Prinz Sigismund	H.-A.	Saturday	Jan. 6
Trent	R. M.	Tuesday	Jan. 9
Metapan	U. F. C.	Thursday	Jan. 11
Prinz August Wilhelm	H.-A.	Tuesday	Jan. 16
Zacapa	U. F. C.	Thursday	Jan. 18
Sibiria	H.-A.	Saturday	Jan. 20
Oruba	R. M.	Tuesday	Jan. 23
Almirante	U. F. C.	Thursday	Jan. 25
Prinz Eitel Friedrich	H.-A.	Tuesday	Jan. 30
Santa Marta	U. F. C.	Thursday	Feb. 1
Prinz Sigismund	H.-A.	Saturday	Feb. 3
Magdalena	R. M.	Tuesday	Feb. 6

NEW ORLEANS TO COLON.

Abangarez	U. F. C.	Saturday	Dec. 16
Heredia	U. F. C.	Wednesday	Dec. 20
Atenas	U. F. C.	Saturday	Dec. 23
Parismina	U. F. C.	Wednesday	Dec. 27
Turrialba	U. F. C.	Saturday	Dec 30
Cartago	U. F. C.	Wednesday	Jan. 3
Abangarez	U. F. C.	Saturday	Jan. 6
Herdia	U. F. C.	Wednesday	Jan. 10
Atenas	U. F. C.	Saturday	Jan. 13
Parismina	U. F. C.	Wednesday	Jan. 17

COLON TO NEW ORLEANS.

Turrialba	U F. C.	Thursday	Dec. 21
Cartago	U. F. C.	Thursday	Dec. 21
Abangarez	U. F. C.	Thursday	Dec. 28
Heredia	U. F. C.	Thursday	Dec. 28
Atenas	U. F. C.	Thursday	Jan. 4
Parismina	U. F. C.	Thursday	Jan. 4
Turrialba	U. F. C.	Thursday	Jan. 11
Cartago	U. F. C.	Thursday	Jan. 11
Abangarez	U. F. C.	Thursday	Jan. 18
Heredia	U. F. C.	Thursday	Jan. 18

The Leyland Line steamer *William Cliff* will sail from Colon for Port Limon and New Orleans, on December 22.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, DECEMBER 27, 1911. No. 18.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Foundation for Emergency Dam.

Preparations are being made to drive concrete piles in a portion of the east backfill of Gatun Locks, about 200 feet above the upper guard gates, for a foundation for the emergency dam for the east chamber. The main feature of the dam, which was described in THE CANAL RECORD of March 8, 1911, is to be a steel truss bridge of the cantilever type, from which will be dropped the wickets to hold in place the sliding panels of the dam proper. The bridge will be pivoted upon the side wall of the chamber and, when not in use, will lie parallel to the axis of the locks; when placed for use, the long, or dam, arm will extend across the chamber and the short arm, at the end of which is the operator's house, will have swung through a quadrant till it extends out over the backfill. The piles are to afford a foundation for the tracks for this quadrant.

Accident to the Dredge Corozal.

The ladder dredge *Corozal* which was launched at Renfrew, Scotland, on September 13, and set out on its way to Balboa by way of the Strait of Magellan under its own steam on December 1, was compelled to return to Falmouth owing to bad weather and to five broken frames at the forecastle above the water line. After repairs are made the *Corozal* will resume its voyage.

Pedro Miguel and Miraflores.

Excavation is in progress for the sills for the emergency dams at Pedro Miguel Lock. The floors of the upper approaches will be laid after the concrete for the sills is in place. The McClintic-Marshall Construction Company has completed the erection of its new construction bridge over the site of the lower lock gates and the foundation panels for those gates have been laid. The Central Division is dumping spoil at the west end of the north side of Pedro Miguel Dam. This is the beginning of dry season operations at the Dam and the greater part of the remaining work will be done this season.

Thirty-one caissons for the cellular approach wall at the upper end of Miraflores Locks are down to rock. Four of the specially devised excavation platforms, using a series chain connection from a steam engine, have been placed in operation. In addition, 11 star drill engines and trestles are being used for hauling up dirt at other caissons. The six-foot sections of caisson shell are moulded at an auxiliary concrete plant near the large cement shed west of the locks, where collapsible forms are placed in a row on a platform along a spur track and filled from a $\frac{1}{2}$-cubic yard portable mixer, mounted on a railway truck. When hardened, the sections are handled and placed by means of a locomotive crane.

Proposed Canal Legislation.

Two bills were introduced in the House of Representatives on December 5, by Mr. Knowland of California. The first provides for the payment of tolls and transit charges on vessels owned by the United States and merchant vessels of the United States engaged in the "coastwise" trade passing through the Panama Canal. There is a proviso that the act shall not apply to vessels in the "coastwise" trade owned in whole or in part by any railroad company, and that the ships favored by the act may be used by the Government at any time as auxiliaries to the Army and Navy, upon payment of the value at the time they are taken.

The second bill provides for the operation of the Canal. The President is given power to provide for the operation of the Canal, fix charges for its use of not over $1.50 nor less than 50 cents per registered ton, American measurement, excepting vessels of the United States and its citizens and vessels of the Republic of Panama, and excepting also that the President may charge the highest rate to vessels engaged in the "coastwise" trade of the United States owned in whole or in part by a railroad company. Vessels accepting free tolls are to be at the disposal of the Government upon payment of actual value at the time of taking. The President is further authorized to establish, maintain and operate dry docks, repair shops, yards, docks, wharves, warehouses, and storehouses.

On December 6 Mr. Roberts of Nevada introduced a bill in the House of Representatives designed to prevent interstate railroads from owning or controlling ships or vessels engaged in trade or commerce through the Canal. It provides that no ship or vessels owned or controlled by any railroad company or corporation engaged in interstate commerce shall be permitted to engage in trade or commerce through the Canal, and provides a fine of not over ten thousand dollars nor less than one thousand, or imprisonment for not more than twelve months nor less than one month for any officer of such a company who knowingly violates or permits the violation of the law.

On December 11 Mr. Lodge of Massachusetts introduced into the Senate a bill providing that all tolls and transit charges which may be imposed upon public vessels or merchant vessels of the United States for passing through the Canal shall be paid from the United States treasury.

Towing Locomotives Award.

Award has been authorized to the General Electric Company of the contract for one electric locomotive for towing ships through the locks, and a provisional award of 39 other locomotives, if the first one proves satisfactory. Five bids for the 40 machines were received, the highest being $827,395.95, and the lowest $498,016.35, that of the General Electric Company. The award was made on the regular bid, in which carbon steel was specified, the optional bid being for vanadium steel. The first locomotive is to be delivered on the Isthmus within 260 days from the award of the contract.

An article descriptive of the locomotives was published in THE CANAL RECORD of September 27, 1911. The machine consists of two tractors, between which is carried a truck bearing a windlass. The locomotives moves along the lock walls on rack track while towing and by friction, except at inclines, when running light. Power is taken from a third rail. Four of the locomotives will be used on each ship, two in front on either wall of the lock, and two behind. Hawsers from the windlass of each locomotive will hold the ship steady while it is passing through, the forward hawsers towing the ship, and those at the rear towing the two rear locomotives.

Hardwood Ties for Relocated Line.

The Panama railroad has made a contract with H. B. Howland of Santo Domingo for seventy-five thousand hardwood ties to be used on the relocation of the railroad. They are to be of the wood known as bayahonda, a sample of which has been approved.

Two classes will be accepted, the first or standard being 7 inches thick, 9 inches wide on face, 8 feet 6 inches long, with a variation allowed from the straight edge on top and bottom of one-half inch, and on sides of 2 inches; second class, $6\frac{1}{2}$ inches thick, 8 inches wide on face, 8 feet 3 inches long, maximum variation from straight edge of one inch at top and bottom and 3 inches on sides. The second class ties may not aggregate over ten per cent of the total number delivered. The ties are to be hewed square and cut evenly at the ends. Delivery must be begun by March 1, 1912, and at least 8,000 ties must be delivered every two months thereafter, the entire delivery to be completed by June 30, 1913.

The purchase of hardwood ties from Santo Domingo is made after efforts to obtain a sufficient number on the Isthmus have failed. There is hardwood in Panama, but no one was

NOTES OF PROGRESS.

(Continued.)

found who would guarantee to deliver so large an order of ties at a reasonable rate. Several contracts or agreements have been entered into with other parties but in all cases the contractors have failed. When the railroad was being constructed in 1850-1855, although it ran through virgin forest, it was necessary to import ties from Colombia, because the Isthmus could not furnish them. Although the initial cost of hardwood ties is about twice that of the softwood ties purchased in the States, and it is more expensive to lay them since each tie must be bored for the spikes, they are more economical because they last many times as long.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 73 per cent completed, 165,949 cubic yards, out of a total of 225,000, having been placed at the close of work on December 23. A statement of the amount laid each working day last week, and of the total in place, follows;

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
December 18	184	8.00	1
December 19	180	8.00	1
December 20	54	3.00	1
December 21	76	3.00	1
December 22	134	6.30	1
December 23	48	2.30	1
Total	676	31.00	1
Previously reported	165,273		
Grand total	165,949		

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending December 23, follows:

DATE.	Hours worked.	Cubic Yards.
December 18	7.45	2,723
December 19	4.30	1,934
December 20	8.20	2,869
December 21	7.15	2,380
December 22	7.50	2,890
December 23	7.30	3,305
Total	43.10	16,101

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending December 23, follows:

DATE.	Hours worked.	Cubic Yards.
December 18	3.43	1,657
December 19	3.50	1,850
December 20	3.16	1,529
December 21	3.38	1,716
December 22	3.57	1,752
December 23	3.31	1,698
Total	21.55	10,202

Aids to Navigation.

The Panaman Government has had a red light placed on the buoy at the entrance to the Bay of Panama to indicate the shoals at Calafate Point.

Society of the Chagres Year Book.

The first year book of the Society of the Chagres is almost ready for distribution. One section contains the constitution of the Society, the list of charter members, a list of members who had joined prior to December 20, 1911, with their addresses on the Canal Zone and in the United States, and biographical sketches of two hundred of the present membership of 250. The second section of the book contains the speech made by President Roosevelt to employes on the Canal at the Administration Building in Culebra in 1906, the speech he delivered on Dock 11, at Cristobal upon the occasion of his departure for the States; an account of the farewell reception to former Chief Engineer John F. Stevens on Dock 11, in 1907, upon the occasion of his departure, the speech made by Col. G. W. Goethals at Corozal upon his arrival on the Isthmus, and an extract from the speech made by President Taft at Paraiso on November 15, 1910.

CONCRETE WORK IN THE LOCKS.

Over 74 per cent of the concrete for the locks is in place, the amount at the close of work on December 23, being 3,128,727, cubic yards, out of a total of approximately 4,199,400. A total of 25,786 cubic yards of concrete was laid in the locks during the week ending December 23.

GATUN LOCKS.

Over 87 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on December 23 being 1,757,126 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending December 23, and of the total, follows; and similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
December 18	1,406	21.06	6	416	5.40	2	....	1,872½
December 19	1,268	20.00	6	396	4.40	2	....	1,714
December 20	1,488	24.50	4	408	5.40	2	....	1,942
December 21	1,356	21.04	4	306	4.40	2	40	1,746
December 22	1,146	19 06	4	502	6.40	2	....	1,681
December 23	762	13.02	6	400	5.40	2	....	1,206½
*Portable mixers	....	....	......	268	....	......	....	....
Total	7,426	118.58	5	2,696	33.00	2	40	10.162
Previously reported	....	....	......	....	....	......	....	1,746,964
Grand total	....	....	......	....	....	......	....	1,757,126

The 268 yards shown for the portable mixers are reinforced concrete, and were placed on the following dsys: December 18th, 50½; December 19th, 50; December 20th, 46; December 21st, 44; December 22nd, 33; December 23rd, 44½.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 94 per cent completed, 787,774 cubic yards, out of a total of 837,400 bucket measurement, having been placed at the close of work on December 23. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
December 18	350	10.50	2	110	7.50	1	....	460
December 19	422	13.00	2	108	7.25	1	....	530
December 20	412	12.50	2	245	17.00	3	....	657
December 21	524	16.00	2	146	8.50	2	....	670
December 22	380	11.00	2	200	14.50	2	....	580
December 23	260	7.00	2	255	18.00	3	....	515
Total	2,348	70.00	2	1,064	72.75	2	....	3,412
Previously reported	....	....	......	....	....	......	4,423	784,362
Grand total	....	....	......	....	....	......	4,423	787,774

MIRAFLORES LOCKS.

Over 42 per cent of the concrete for the system of two twin locks at Miraflores was in place on December 23, the total amount on that date being 584,097 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour woking days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
Dec. 18	1,334	39.50	7	426	6.30	1	231	16.50	3	....	1,991
Dec. 19	1,418	39.67	7	480	6.95	2	164	14.50	2	....	2,062
Dec. 20	860	33.83	5	462	6.23	2	301	17.00	3	....	1,623
Dec. 21	1,254	38.17	6	518	7.50	2	266	19.00	3	....	2,038
Dec. 22	1,448	43.67	7	664	10.00	2	199	17.00	2	....	2,311
Dec. 23	1,282	41.28	6	680	11.00	2	225	15.00	3	....	2,187
Total	7,596	236.12	6.33	3,230	47.98	1.83	1,386	99.00	2.67	....	12,212
Previously reported	....	....	......	....	....	......	....	....	......	3,693	571,885
Grand total	....	....	......	....	....	......	....	....	......	3,693	584,097

ELECTRIC SHOCK.

Rules for First Aid to Persons Shocked by Electric Current.

In view of the increasing use of electricity at the locks and of several accidents of recent occurrence, the Sanitary Department authorizes the publication of the following directions for rendering first aid to a person suffering from electric shock.

The first thing to do is to remove the body from contact with the conductor, or interrupt the flow electricity through the conductor. If in doubt as to the strength of current passing through the conductor with which the body of the person is in contact, the body should not be touched with the bare hands unless the person attempting the rescue is standing on an insulated surface, nor must the rescuer permit his own body to come in contact with the conductor.

If a switch is handy it should be opened before rescue is attempted.

Rescue must be carried out as promptly as possible, for the danger is much increased the longer the electrical current is permitted to pass through the person.

If possible, the rescuer should insulate himself by covering his hands with rubber gloves, mackintosh, rubber sheeting, several thicknesses of silk or even absolutely dry cloth. In addition, he should if possible complete his insulation by standing on a dry board, several layers of dry paper, or on a folded dry coat, or wear rubber shoes or boots.

If the conductor is under the body and the ground is dry, it is perfectly safe to stand upon it and to pull the person off the wire with the bare hands, but the hands of the rescuer should touch the clothing only, and this should not be done when the clothing is wet nor when the current is very powerful.

The conductor may be lifted from a person in contact with it with a dry board or stick. A long stick or board should be used and care be taken that only dry lumber is employed.

In removing a conductor from a person or a person from a conductor, it should be done with one rapid motion, as rocking a person to and fro on the conductor will increase the shock and burn.

It may be occasionally best to cut a live wire before any attempt at rescue is made. This may be done safely with an axe or hatchet provided with a long dry wooden handle or with a pair of properly insulated pliers.

TREATMENT OF PERSON AFTER RESCUE.

Send for a doctor at once. Loosen clothing around neck, chest and abdomen. Start artificial respiration. Keep it up for at least thirty minutes if he does not breathe earlier without it. Keep the patient as warm as possible.

The easiest method of carrying out artifical respiration is as follows—Lay patient face downwards with his chest resting on a tight roll of clothing or cloth at least eight inches in diameter. Stand across him facing the patient's head. Place your hands on the back of the patient's chest just below the shoulder blades with your fingers extending along the sides of the chest. Have some one hold the patient's head away from the ground and level with the rest of the body. Press down with your hands on the back of the patient's chest at the rate of twenty times per minute, that is, bear down, count four, let up, count four, bear down, count four, etc. Keep this up until the patient begins to breathe naturally or until the doctor arrives. As soon as the patient begins breathing discontinue artificial respiration but start it immediately again if the patient stops breathing.

Sometimes the tongue drops down against the gullet. Before commencing artificial respiration it is well therefore to pry open the mouth, using a stick if necessary, and look into the mouth to see that the tongue has not dropped back. If it has dropped back, get someone to get hold of it with a handkerchief or cloth and hold it while artificial respiration is being given, at the same time keeping the mouth open with some object such as a stick or handle of a knife.

While artificial respiration is being given have the patient's legs vigerously rubbed.

Do not assume that an unconscious man is dead. Shocks from even high voltages are not necessarily fatal. Keep up the work of stimulation and artificial breathing at least till a physician arrives. Shock produces a form of paralysis, which the movements seek to counteract.

American Institute of Electrical Engineers.

About two hundred members of the American Institute of Electrical Engineers will arrive on the Isthmus, one ship from New York and one from New Orleans, on Thursday, January 26. The visit will last one week.

Masonic Banquet.

A special train for the Masonic banquet at the Washington Hotel, Colon, given by Sojourners' Lodge No. 874, will leave Panama at 7.15 p. m. on Saturday, January 30.

Postal Business and Canal Zone Revenues.

During the month of November there were 23,256 money orders issued, amounting to $487,090.57. Of this amount, $370,540.80 was issued payable in the United States, $115,603.22 in the Canal Zone, $636.55 in Martinique, and $310.00 in Cost Rica. The fees amounted to $2,303.21, and the amount of orders paid and repaid was $128,493.32.

Postal sales during the month amounted to $6,862.00, and newspaper postage to $18.26.

The revenue collections for the month were as follows:

Bicycle and Chauffeur licenses	$29.00
Distillation licenses	10.80
Motor Vehicle licenses	111.00
Taxes, licenses, etc	6,180.42
Total	$6,331.22

Missing Men.

Any one having information regarding the whereabouts of Meredith Dryden of North Plainfield, New Jersey, who is believed to be on the Isthmus of Panama, is requested to communicate with the American Legation, Panama.

Any one having information regarding the whereabouts of George W. Smith, formerly of Pinegrove, Pa., who is supposed to be on the Isthmus of Panama, is requested to communicate with THE CANAL RECORD.

The Woman's Foreign Missionary Society of the Methodist Episcopal Church, Panama, will hold its next meeting on January 12, and not on January 18, as stated in the issue of THE CANAL RECORD for December 13. Mrs. L. M. Kent will entertain the society in the Commission chapel at Paraiso.

RAINY SEASON OF 1911.

Least Fall of any Season During American Occupation.

The accumulated rainfall during the rainy season of 1911 was the lowest during the American occupation. This statement is based upon the assumption that the dry season has begun, as all appearances indicate it has. The totals are below normal at all stations, the deficiency from the normal varying from 3 per cent at Colon to about 35 per cent at San Pablo, Tabernilla, and Bohio. The wet season with the lowest rainfall previous to 1911 was that of 1908 in the Central and Pacific sections, and 1907 in the Atlantic section.

In the tables below the accumulated rainfall for 1911 is given, as compared with that for 1908, and with the average for the years of record; and there is also given the discharge of the Chagres River at Gatun, as compared with that for 1908, and with the mean for 22 years of record.

ACCUMULATED WET SEASON RAINFALL, MAY 1 TO DECEMBER 1, 1911—(AMOUNTS IN INCHES.)

STATION	1908	Rainy Season		1911 in per cent of av'ge
		1911	Average for years of record	
Ancon	50.58	53.73	61.37	88
Balboa	54.07	51.38	57.57	89
Pedro Miguel	65.60	55.60	72.34	77
Rio Grande	74.75	72.99	78.37	93
Culebra	70.33	68.82	75.39	91
Camacho	77.08	75.54	83.23	91
Empire	64.11	61.80	70.75	87
Gamboa	67.21	64.49	78.65	82
Alhajuela	96.19	82.34	92.09	89
San Pablo	70.85	51.91	80.73	64
Tabernilla	82.33	55.59	84.50	66
Bohio	108.89	67.81	103.15	66
Trinidad	99.93	80.14	96.14	83
Monte Lirio	112.86	100.99	110.86	91
Gatun	102.63	85.46	106.31	80
Brazos Brook	124.47	105.99	112.24	94
Colon	118.92	102.85	105.90	97

DISCHARGE OF THE CHAGRES RIVER AT GATUN.

MONTH	Cubic feet per Second		
	1911	Mean for 22 years period	1908
January	3.636	6.135	1.976
February	2.999	2.643	1.046
March	1.439	1.622	.851
April	2.071	2.357	.892
May	5.952	6.177	5.046
June	6.488	6.654	5.025
July	6.905	8.548	5.744
August	4.525	9.367	8.886
September	4.506	9.301	8.708
October	7.266	10.988	8.859
November	12.764	14.169	14.408
December		12.416*	8.017
Annual Mean		7.608*	5.788

MONTH	Runoff-Inches on watershed		
	1911	Mean for 22 years period	1908
January	3.170	5.358	1.729
February	2.364	2.096	.852
March	1.257	1.417	.738
April	1.752	1.991	.759
May	5.200	5.396	4.404
June	5.489	5.627	4.251
July	6.030	7.467	5.015
August	3.954	8.181	7.759
September	3.805	7.864	7.364
October	6.341	9.598	7.747
November	10.789	11.976	12.171
December		10.844*	7.010
Annual Total		78.613*	59.799

* 21 year period.

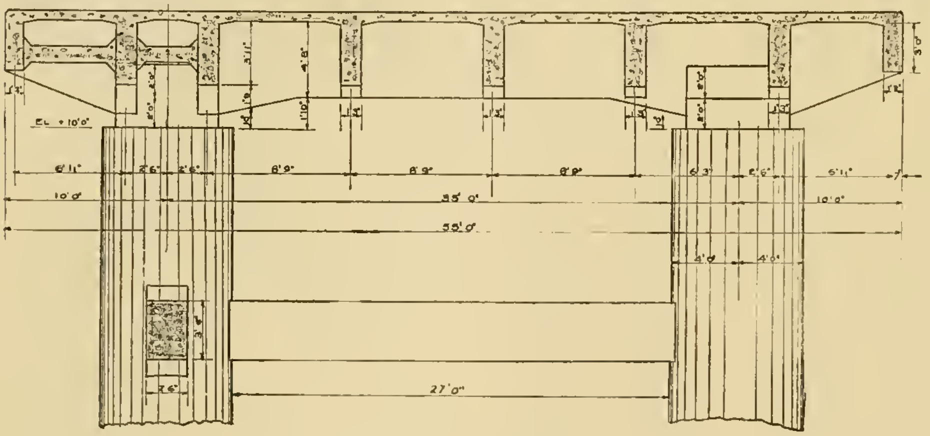
LOST—In Colon between the Y. M. C. A. and the Panama railroad office on December 8, a gold breast pin with design of an engineer's transit and level, with "Pratt Institute of Brooklyn" in gold letters. A reward is offered if returned to R. L. Mendes, care of Chief Engineer, Panama Railroad Company, Colon.

LUMBER WHARF AT BALBOA.

First of Permanent Harbor Improvements at Pacific Entrance.

The essential features of the concrete lumber wharf at Balboa, the first of the permanent improvements to be constructed in the harbor at the Pacific end of the Canal, are two rows, 35 feet apart, of solid concrete caissons, 8 feet in outside diameter, placed on 30-foot centers; main girders, resting on every set of caissons and extending the width of the wharf, 55 feet; 8 axial beams, bridging the spaces between the main girders and heavily reinforced at their junctures with them; and on these supports, a concrete floor, 6 inches thick.

The tops of the caissons are 10 feet above mean sealevel; the surface of the floor is at elevation +17. The concrete filling for the caissons, which is reinforced from ground rock to top with four double rows of French rails, connected by fishplates, is continued into the forms for the main girders, the girders and the caissons thus being set monolithically. The ends of each girder are embedded in a block of concrete 5 feet wide at the bottom, where they join the caisson filling; having rectangular cross-section in the parts projecting beyond the caissons, being 30 inches thick and 4 feet 8 inches deep. It is reinforced with 16 bars of 1- and 1¾-inch twisted steel, enclosed in stirrups of twisted ½-inch bars. The juncture of a main girder with a cassion is shown in sketch (A).

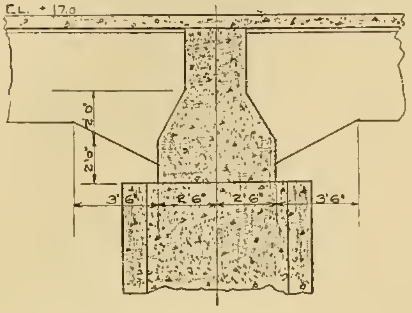


(B) CROSS-SECTION BETWEEN PIERS.

The longitudinal beams between girders are shown in sketch (B). On the water side of the wharf will run a railway track, directly over the outer row of caissons. All beams, except the two at the edges of the wharf, will be 15 inches thick and 3 feet 9 inches deep; the edge beams will be 14 inches thick and 3 feet deep. The main reinforcing in the middle of each beam will consist of 8 1-inch twisted bars, with stirrups of ⅜-inch twist placed about every 18 inches; and the track beams will have, as additional reinforcement at the juncture with the main girder, two 1¼-inch twisted bars, extending into the girder from each side, or four at each caisson.

Fourteen feet below the tops of the caissons, or four feet below mean sealevel, the caissons of the outer row are joined together with tie girders; and at the same elevation, a tie girder extends from the caisson across to its mate of the inner row. The tie girders are 2 feet deep and 22 inches thick and reinforced with eight 1-inch twisted rods, with ⅜-inch stirrups. Each caisson of the row next the land is anchored by means of a steel rod, 1¼ inches in diameter, extending about a hundred feet to a "dead man," buried 7½ feet underground. The "dead man" is of concrete, 7½ by 3 by 3½ feet in dimensions.

Five panels of the superstructure have been completed. The junctures of successive panels are made midway between main girders. The reinforcing rods for the beams extend continuously from girder to girder. Accordingly, for each panel the girder and the beams extending on either side are laid simultaneously as a solid mass of concrete. For each uniform panel, 102.4 cubic yards of concrete are used. The concrete is of cement, sand and rock in the proportion of 1:2:4. All the concrete for a panel is laid in one day from the ½-cubic yard portable mixer employed. A panel is laid every fourth day, the additional time being required for placing the forms and the reinforcing steel.



(A) JUNCTURE OF GIRDER WITH CAISSON.

The wharf is to be 656 feet long and 55 feet wide. Made wholly of reinforced concrete, it presents from below an imposing appearance of strength and stability, with a graceful Doric effect in the sweep of beams and girders.

Obituary.

George E. Newcomb, the father of H. S. Newcomb, an employe of the Panama Railroad Company, living in Colon, died in Colon Hospital on December 19. He was 69 years of age, married, and had been on the Isthmus one month, visiting his son.

The election of officers of the American Veterans of Foreign Service for the ensuing year will be held at a meeting on the evening of Saturday, December 30, in Ancon lodge hall. All members and those eligible to membership are invited to attend. A buffet lunch will be servied after the business meeting.

SOCIAL LIFE OF THE ZONE.

Meeting of Federation—Visit of Bishop Knight. —Christmas Benefits.

The date of the meeting of the Canal Zone Federation of Women's Clubs to be held in Cristobal in January has been set for the 27th. The federated clubs are requested to elect their delegates and alternates for the meeting, and to prepare such resolutions as they expect to bring before the Federation. Details of the arrangements, including information regarding transportation, will be announced later. Any club woman, not a member of a Zone club, but formerly, through her membership in an affiliated club, a member of the Federation, may receive an invitation to this meeting by sending her name to the corresponding secretary, Mrs. Thomas E. Brown, Jr., Cristobal. A supply of Federation pins has been received and these are in the hands of the treasurer and may be purchased by members of by those who have been members, upon presentation of credentials. This is probably the last supply of these pins that will be ordered and women wishing to secure this souvenir of club life in the Canal Zone are requested to place their orders before or at the January meeting. Communications regarding the pins may be addressed to Mrs. M. E. Smith, treasurer, Empire, Canal Zone.

The Rt. Rev. Albion W. Knight, D. D., Bishop of Cuba, will arrive on the Isthmus on Saturday, December 30, for his annual visitation to the Panama Mission of the Protestant Episcopal Church. This will be Bishop Knight's fourth visit to the Isthmus, he having been designated commissary of the presiding Bishop in 1907, at the time of the transfer of the Anglican Church to the jurisdiction of the Protestant Episcopal Church of America. Following is the itinerary that has been arranged for Bishop Knight's visit: Sunday, December 31, Christ Church By-The-Sea, Colon; Monday, January 1, St. Stephen's, Gatun; Tuesday, January 2, St. Mark's, Culebra, West Indian; Wednesday, January 3, St. Paul's, Panama; Friday, January 5, St. Augustine's, Paraiso; Saturday morning, January 6, St. Mark's, Culebra, conference of the clergy; Sunday, January 7, 7.45 a. m., St. Mark's, Culebra, ordination; 10.45 a. m., St. Mary's, Empire, consecration; 3 p. m., Ascension Church, Bas Obispo; 7.45 p. m., St. James', Empire, West Indian; Monday, January 8, St. Philip's, Las Cascadas; Tuesday, January 9, St. Andrew's, Gorgona; Thursday, January 11, St. Luke's Hospital Chapel, Ancon.

The residents of the village of Las Cascadas raised a fund for the Christmas dinner of the patients in the leper asylum at Palo Seco; with this money, which amounted to $50, a supply of turkeys, cranberries, vegetables, fruits, cakes, puddings, and candies was sent. The Canal Zone Federation of Women's Clubs sent a Christmas box to Palo Seco with a gift for each patient, in accordance with the custom established in 1909. The Altar Guild of St. Luke's Church, Ancon, presented gifts to various wards in Ancon Hospital, including the department for the insane. The Christmas committee for the relief of the convicts in the Canal Zone penitentiary sent a large donation of cakes, sweets, and other luxuries to the inmates of the Culebra peniteniary, and those at the stockade on Mandingo River. The Methodist Church in Panama supplied a Christmas tree and treat for the inmates of the Chiriqui prison in Panama.

CIVIL SERVICE RULES.

Concessions Made to Americans Employed on the Isthmus.

Americans employed by the Isthmian Canal Commission on the Isthmus who wished to secure employment in the Federal civil service in the United States have been handicapped since the enactment of a law, approved July 2, 1909, (36 Stat., 1) wherein it was provided that thereafter applicants for positions in the apportioned Departmental service would be examined by the Civil Service Commission only in the State or Territory in which such applicants claimed *bona fide* residence and that an applicant must be actually domiciled in such State or Territory for at least one year previous to the examination. The apportioned service includes practically all positions in the District of Columbia. Consequently, the effect of this law has been to exclude Americans on the Isthmus from the competitive examinations for positions in Washington. To minimize this handicap, which can be entirely removed only by action of Congress, the Civil Service Commission has recently agreed that an employe of the Isthmian Canal Commission who wishes to compete for a position in Washington may be examined in his home State during his annual vacation and that a special examination will be authorized if the regular examination is not scheduled to be held during the limited period of the applicant's leave of absence.

The Civil Service Commission has also stated that two registers shall be established for classified positions under the Isthmian Canal Commission, one to contain the names of qualified applicants on the Isthmus and the other the names of qualified applicants in the United States, and that certification will be made from the Isthmian register first and until that register is exhausted, unless certifaction from the second register is especially requested by the Isthmian Canal Commission. This should result in the early appointment of all local applicants who pass examinations and will make it relatively easy for any employe to acquire a classified status and thus become eligible for transfer to the classified service in the United States.

The above changes in the regulations were made on the recommendation of Mr. John A. McIlhenny, Civil Service Commissioner, who recently visited the Isthmus for the purpose of ascertaining what might properly be done to facilitate the transfer of employes on the Isthmus to other branches of the service as the work here is completed.

The following is the test of the ruling as recorded by the United States Civil Service Commission:

Examinations, Isthmus of Panama—Examination of Applicants on the Isthmus and in the United States—Preference in Certification.

Hereafter in examinations on the Isthmus of Panama, two eligible lists will be established; First, of those who are examined on the Isthmus; and certification will be made to fill vacancies on the Isthmus from this register first; Second, of those who are examined in the United States, and this register will be used only when the register on the Isthmus is exhausted, or upon request of the Chairman of the Isthmian Canal Commission.

Any person employed on the Isthmus of Panama in an unclassified status will be permitted to take an examination for the apportioned service in his home State at such time as he may be in such State on vacation. If any such person passes such examination his name will be entered upon the appropriate register, together with those examined in the open competitive examination of the same kind nearest in point of time to the date of his examination. To avail himself of the privilege hereby extended any such employe must duly file the necessary application with the Commission (Civil Service Commission), and in connection therewith establish domicile in the State claimed for at least one year immediately preceding, as required by the statute; but his Federal employment on the Isthmus will be held not to vitiate his claim to domicile in the State in which he was actually domiciled immediately preceding such employment on the Isthmus.

This action amplified minute 17 of July 16, 1909.

In connection with the second sentence in the second paragraph, it is to be noted that the term of eligibility of applicants qualifying under the above terms is to be coincident and coextensive as to time with other eligibles from the examination with the papers of which those of the Isthmian eligibles will be consolidated.

As the above notice is given in explanation of the foregoing ruling, which ruling is stated in full, persons interested should be certain that any possible inquiry is not answered above before writing this office for information, as the ruling and explanation above set forth will form the basis of replies to inquiries.

John K. Baxter,
Secretary, Isthmian Civil Service Board.
Culebra, C. Z., December 23, 1911.

Civil Service Examinations

An examination will be held about the last week in January for stenographer and typewriter in the Isthmian Canal and Philippine services and for typewriter in the Isthmian Canal service. In requesting information and application blanks for any of the above the name of the examination desired should be stated.

☞ No one should report for examination before ascertaining the exact date on which the examination will be held.

John K. Baxter.
Secretary, Isthmian Civil Service Board.
Culebra, C. Z., December 23, 1911.

Pilots, Masters, Mates, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on January 3, 1912. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m., on January 3, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

PERSONAL.

Attorney General Wickersham, and Mrs. Wickersham, The Ambassador of France to the United States, J. J. Jusserand, and Madame Jusserand, and the Minister from the Netherlands to the United States. J. J. Loudon, and Mrs. Loudon are passengers on the *Atenas* due to arrive at Colon on December 28.

The Congressional party, comprising members of the Interstate and Foreign Commerce Committee of the House of Representatives, sailed for the United States on the *Cristobal* on December 24.

Maj. G. M. Hoffman, accompanied by his wife and family, returned to the Isthmus on the *Panama* on December 20.

LOCK MACHINERY.

Storage Installation—Miter Gate Machines.

Storage room for the lock machinery, between the time of its arrival on the Isthmus and when it is set in the lock walls, will be provided in the cement shed at Gatun for the locks at that place, and in the old machine shop at Paraiso for the locks at Pedro Miguel and Miraflores.

At Gatun the six south bays of the cement storage shed, each 50 feet wide and 110 feet long, will be used. Each of these bays was fitted with an overhead crane for handling cement from barges into the storage shed, but two of the cranes have been taken out, and in these bays only such material as can be handled by hand will be stored. In the other four bays the handling will be done by crane. A spur track has been built into the south end of the cement shed from the toe of the dam, and over this trains with the machinery will run into the shed, where the overhead cranes will unload them.

At Paraiso the two cranes taken from the cement shed at Gatun will be installed, after they have been cut down at Gorgona shops to 37 feet 8 inches and 27 feet respectively. The bays in which these cranes will operate are 27 by 135 feet and 38 by 160 feet. Here, as at Gatun, only heavy parcels will be stored in the crane bays, the man-size packages being stored where they will be handled by hand.

In all there will be 30,000 tons of machinery and parts to store over a period of 18 months. When the quantity in storage is greatest it is estimated that 103,000 square feet of space will be required, and the average will be 80,000 square feet. About half the material will be required at Gatun, half at the Pacific locks.

The first of the Stoney gate valve machines to complete test in the United States has arrived on the Isthmus and is being erected in the west wall of the upper locks at Gatun. The first of the Stoney gate valves, which will control the flow of water through the main culverts of the locks, will arrive early in February.

One of the cylindrical valves, which control the flow of water from the main culvert of the center wall into the lateral culverts beneath the lock floor, together with the machine for operating it, has been set in the center wall of the upper locks at Gatun. It will control one of the culverts for the west lock.

The first of the miter gate moving machines was tested at the plant of the contractor, The William Tod Company, Youngstown, Ohio, on December 2, and found satisfactory. In accordance with the terms of the provisional award under which 2 machines were contracted for, the award for 90 additional machines will now be made, the total cost being about $652,000.

The machine in this contract was described in The Canal Record of April 26, 1911. It consists essentially of a crank or "bull wheel" to which is fastened one end of a strut or connecting rod, which at the other end is fastened to the lock gate. The bull wheel is mounted in a horizontal position in the lock wall. It has gear teeth on its rim and is driven by a single pinion on a vertical shaft, gear connected with a motor. The wheel, moved through an arc of 197 degrees, closes or opens the gate, according to the direction in which it is turned, the movement being that of a hand reached out to open or close an ordinary gate. Two minutes are required for one complete operation.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

STATISTICAL REPORT FOR NOVEMBER.

The membership of the clubhouses has shown an increase during the year, and the social activities have greatly increased. The following statement shows conditions during the month of November:

Total membership	1,960
Total number bowling games	9,543
Average per day	363
Total number pool and billiard games	26,182
Average per day	1,007
Number tournaments in progress	21
Number of tournament players	305
Total income from soda fountain	$3,697.29
Average per day	$123.24
Number different men using gymnasiums	557
Total number of men using gymasiums	1,240
Average per day	48
Number enrolled in chess and checker clubs	82
Number enrolled in glee clubs	79
Number enrolled in dramatic and minstrel clubs	50
Number enrolled in camera clubs	51
Number enrolled in orchestras	6
Number enrolled in Bible clubs	131
Number enrolled in educational classes	42
Number members of libraries	1,031
Total number of books withdrawn	3,404
Number of religious meetings	12
Number religious meetings and debates	12
Average attendance	63
Number of lectures	13
Average attendance	56
Number imported entertainments	3
Average attendance	217
Number of local entertainments	37
Average attendance	221
Number functions outside association management	20
Average attendance	102
Number afternoons for women	34
Average attendance	4
Number evening functions to which women invited	53
Average attendance of women	67
Number of committees	43
Different men on committees	224
Number of men called on in hospitals	433
Number of letters written at public tables	7,500
Average per day	260
Total attendance at building	76,345
Average per day	2,527
Number of beds used during the month	392

BOYS' DEPARTMENT.

Number of members	127
Number of afternoons for boys	101
Average attendance	13
Total attendance in systematic gymnasium work	237
Outings	6

GENERAL.

The following is the schedule for moving picture shows for the week of January 1 to 6: Monday, Gatun; Tuesday, Cristobal; Wednesday, Gorgona; Thursday, Empire; Friday, Corozal; Saturday, Culebra.

The final standing of teams in the Isthmian Basket Ball League for the season ending December 23, 1911 follows:

Team.	Won.	Lost.	P.
Cristobal	10	0	1.000
Gatun	7	3	.700
Gorgona	6	4	.600
Culebra	5	5	.500
Corozal	1	9	.100
Empire	1	9	.100

The result of games in the week ending December 23, follows: December 15, Gorgona, 2, Empire, 0 (forfeit); December 16, Gatun, 34, Corozal, 14; December 23 Gorgona, 22, Culebra, 20; Cristobal, 2, Corozal, 0 (forfeit).

COROZAL.

The Handicap pool tournament closed December 20. Lofgren was the winner and will receive a gold medal. Baker and Roberts tied for second place.

Dr. Orenstein delivered a lecture on Sex Hygiene last Wednesday night. About 50 men attended the lecture

Two hundred people attended the Sunday school Christmas Entertainment given at the clubhouse on Saturday night.

"Open house" was observed at the clubhouse on Christmas night. Music was furnished by the Guatemalan Quintet.

CULEBRA.

The basket ball game between Gorgona and Culebra on Tuesday evening was won by the former with a score of 22 to 20 Following is the line-up:

Culebra.	Gorgona.
Cushing	Stevens
Van Zandt	Lauder
Hepler	Swanson
Barcroft	Earle
Stillwell	Carpenter

The volley ball game on Wednesday evening between the Christian League team and the Assistant Chief Engineers was won by the latter with a score of 3 to 1.

All men interested in the field meet to be held at Empire on Washington's Birthday should come out for practice on Monday and Friday evenings.

The tie for billiard tournament between Dubois and Tragsdorf was played off on Monday evening, the latter winning. This gives Mr. Tragsdorf first place and Dubois second.

EMPIRE.

The following high scores were bowled on the alleys during the past week: Duck pins—Rodeghiero, 101, 1908, 110, 106; Reed, 119, 109; Pinney, 101; Davis, 111; Goolsby, 100, 105; N. Giavelli, 107, 100; Swallow, 114; Payne, 112.

A plan is under consideration for the organization of a Spanish class in the near future. Any one desiring to attend will please leave his name at the desk as soon as possible.

The Christmas entertainment held at the clubhouse on Saturday, December 23, was attended by 700 people. Two hundred and fifty children received gifts. The program was by the children. Refreshments were served, consisting of turkey sandwiches, home made cakes and coffee. An orchestra from the Tenth Infantry furnished music.

Plans have been completed for a minstrel show in the near future. The following officers have been elected. Don E. Irwin, director; E. P. Sine, stage manager; W. R. Evans, jr., secretary.

GORGONA.

At the Christmas celebration at the clubhouse on the night of December 23, stockings were hung upon several brilliantly decorated trees, a stocking full of candy, nuts, and fruit for each child present. The trees also bore other presents. There was a short program by the children. Four hundred and twenty five persons were present.

A concert by the Tenth Infantry Band has been arranged for New Year's Night for all the people of Gorgona.

A return performance of the Gorgona Minstrels will be given on Friday night, December 29. Seats were on sale on Tuesday the 26th.

Indoor baseball practice will be held on Thursday night, December 28. After January, the regular baseball night will be Wednesday. Monday night will be devoted to Volley Ball, and Friday night will be turned over for indoor track work in preparation for the "telephone meet" the middle of January, and the indoor meet in Gatun early in February.

GATUN.

G. K. Weston of Cristobal sang several popular songs at the moving picture entertainment on Wednesday, December 20. The songs were illustrated with colored stereoptican slides. Miss Eva Harris acted as accompanist.

The Gatun clubhouse is appropriately decorated for the holiday season. The color scheme is green and red. Among the decorations are about 30 Christmas trees distributed throughout the building, red and green Christmas bells, red and green electric lights, colored paper, and in the center of the lobby a representation of Santa Claus.

The Y. M. C. A. choral club is planning to give a concert in about a month's time. Among the members are: Sopranos: Miss Harris, Mrs. Hughs, Mrs. Hastings, Mrs. Bath, Miss A. Clark, Mrs. N. Johnson, Miss Tease, Miss Neville, Miss Mary Clark, Miss Kimball, Mrs. Harris, Miss Stevenson; Altos: Miss Hanna, Mrs. Windes, Miss Adams, Miss Sessions, Mrs. Housel; Tenors: Messrs. Coleman, Shailer, Messina, Langston, Perkins, Lloyd, Arthur, Parker; Basses: Messrs. Ruckert, Carr, C. Dewey, Wm. Dewey, Ourand, Fitzgerald, Rohr, Young, F. Smith, Kitts. Mr. A. B. Dickson acts as director.

The Tenth Infantry Regimental band of 30 pieces will give a concert on Thursday evening, December 28, at the clubhouse. The program will be as follows: March, "National Emblem," Bagley; Fantasia, "Echoes from the Metropolitan Opera House," arranged by Moses; Serenade, "La Paloma," Yradier; Waltz, "Blue Danube," Strauss; Southern plantation songs, arranged by Boetzer; Nisaic, Quartette from "Rigioletto," Verdi, Intermezzo, "Isis," Morse; Selection, "Girl of My Dreams," Hoschna; Popular melange, arranged by Alford; "Star Spangled Banner."

CRISTOBAL.

The Christmas Entertainment for the white people of Cristobal was held on Saturday evening, December 23. The program consisted of a play by the children, under the supervision of Mrs. L. J. Hart, Mrs. James Perkins and Mrs. Bronson. There was an attendance of 368. The hall was decorated with two large Christmas trees, palms and Japanese lanterns. Four hundred and fifty boxes of candy and a barrel of apples were distributed during the evening. The program opened at 7 o'clock, closing at 8, in order that the bachelors' program could begin at nine. The men's entertainment began at 9 o'clock with an audience of 207, and consisted of a minstrel sketch by Messrs. Emery, Cogan and Loughery from Gorgona. Refreshments were served consisting of turkey, cheese and ham sandwiches, coffee, cigars, apples, ice cream and candy, and home made cake.

At the regular meeting of the Literary and Debating Club on Wednesday evening, December 20, the following officers were elected for the ensuing term; C. J. Dinnin, president; G. K. Weston, vice-president; C. A. Burrows, secretary. H. J. Wempe was appointed chairman of the entertainment and program committee.

The following high scores were made on the local bowling alleys during the week ending December 23: Ten pins—Louch, 213, 237, 201; Herring, 207; Collins, 204, 206, 213, 200, 223, 213, 225; Bullard, 213, 204, 201; Rabbitt, 210, 231, 204. Candle pins—Herring, 105; Barrett, 120, 106; Louch, 102, 106; Collins, 106; Grover, 107, 102. Duck pins—Herring, 107; Louch, 109, 100; Smith, 107; Orr, E., 105; Marquez, 107, 104, 105, 101; Cotton, C., 101; Barrett, 113, 104, 108, 101; Barte, 107; Schofield, 101; Herrington, 108; Claherty, C., 103; Claherty, P., 108; Farrell, A., 110.

Misdirected Letters.

Ancon, C. Z., December 26, 1911.

The following insufficiently addressed letters originating in the United States and its possessions have been received at the office of the Director of Posts and may be secured upon request of the addressees:

LETTERS UNCALLED FOR DECEMBER 18.

Allyne, Edward
Blackmon, Edwin (pkg)
Bell, W. S.
Best, Mrs. Virginia (pkg)
Bemmger, M. P. (pkg)
Buck, Mrs. C. C.
Bryan, Miss J.
Coffey, M. E.
Craig, James
Eason, Mrs. Helen
Enos, Fred
Finck, Mr. C. V. L.
Hines, Joseph
James, C. E. (2)
Jerry, Carl R.
Jones, Charles
Kelling, Mr. & Mrs. Edward
Kierman, John C.
Kelly, Mrs. R. M.
King, Miss Ella Faye
Mitten, Dr. H. W.
Moyer, Jennie
McConnell, W. C.
Opperman, Erwin Christian
Plankett, Nathen J.
Riordon, William H.
Rodriguez, Messrs. Jesus & C.
Stoddard, Charles
Tayler, Thomas
Thompson, David
Watson, Wellington. (pkg)
Werner, Senor Don R. (pkg)
Zion, Mr. S. (2)

LETTERS UNCALLED FOR DECEMBER 26.

Aquirre, Eulalia
Anderson, Chas. H.
Anderson, Frank A.
Bailey, Dr. Chas.
Beach, Frank A.
Behlen, Ernest
Bernard, J.
Church, Sidney
Collins, J. J.
Cristobal, A. M. (2)
Davy, E. D.
Dyer, E. J.
Falkner, W. H.
Gordon, Robert C. C. E.
Gothuduson, Frans
Grimes, Mrs. Mollie
Houchin, John W.
Jarvis, Miss Grace
Lister, N. E.
MacLaud, John Y.
McGraw, Don
McGraw, J. M.
Mackenzie, Alexander
Nicholson, E. P.
Reed, Wm. F.
Pulsifer, Chase
Ressinger, C. S.
Rose, Mrs. (care Capt. Rose)
Sanger, Victor
Smith, Dr. W. F. (pkg)
Tobley, Samuel
Walsh, Maurice G.
Woods, J. S.

Sale of Public Building.

OFFICE OF THE CHIEF QUARTERMASTER,
CULEBRA, C. Z., December 22, 1911.

Sealed proposals will be received at this office until 3 p. m. Friday, January 5, 1912, and then opened for the purchase of building No. 13, located at San Pablo. Successful bidder will be required to remove building within thirty (30) days from date of sale, and will be granted the Commission freight rate over the Panama Railroad for material recovered from same. Proposals should be accompanied by certified check, post office money order, or cash for 5 per cent of amount bid. The Government reserves the right to reject any or all bids. Envelopes containing proposals should be endorsed "Proposal for Purchase of Building" and addressed to Colonel C. A. DEVOL, *Chief Quartermaster.*

Auction of Unclaimed Shipments.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., December 8, 1911.

In order to recover freight and storage charges, the Panama Railroad will dispose of the accumulation of Over and Unclaimed Shipments now in its possession, by public auction, commencing Wednesday, January 10, 1912, at 9.30 a. m.; sale to be held on Dock No. 11, Cristobal, C. Z.

The items to be sold consist of a miscellaneous assortment of wines, liquors, household goods, building material, stationery, groceries, dry goods, machinery, and merchandise in general, all of which has been held six months and over in an effort to locate owner.

J. A. SMITH, *General Superintendent.*

OFFICIAL CIRCULARS.

Classified Expenditure Accounts.

EMPIRE, C. Z., December 22, 1911.

CIRCULAR No. 34:

Effective with the accounts for November 1911, the following classified expenditure accounts have been authorized by the Chairman and Chief Engineer:

502—Atlantic Seacoast Batteries.

A—Construction.

To this account will be charged all labor, material and other expenses incidental to the construction of seacoast batteries on the Atalntic side of the Canal Zone.

B—Plant.

To this account will be charged all plant heretofore or hereafter purchased for the work of constructing the seacoast batteries on the Atlantic side; and credited with plant transferred to other divisions where original purchase was made from fortification funds.

503—Pacific Seacoast Batteries.

A—Construction.

To this account will be charged all labor, material and other expenses incidental to the construction of seacoast batteries on the Pacific side of the Canal Zone.

B—Plant.

To this account will be charged all plant heretofore or hereafter purchased for the work of constructing the seacoast batteries on the Pacific side; and credited with plant transferred to other divisions where original purchase was made from fortification funds.

Expenditure account 502, Seacoast Batteries, as authorized in Circular 33 is abolished and the charges thereunder will be rewritten under the accounts authorized above.

H. A. A. SMITH,
Examiner of Accounts.

Removal of French Scrap.

CULEBRA, C. Z., December 23, 1911.

CIRCULAR No. 426:

Hereafter no French scrap of any description will be loaded by anyone without direct instructions from the Chief Quartermaster.

In case it becomes necessary, for construction purposes, to remove this material, the Chief Quartermasters written instructions shall first be secured.

The French scrap made in the shops from repairing equipment now in the use will be kept separate from other scrap, and no shipments made unless directed by the Chief Quartermaster.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Half-Rate Mileage Books.

CULEBRA, C. Z., December 18, 1911.

CIRCULAR No. 420-A:

1. Effective January 1, 1912, the issuance of half-rate requests for trip tickets will be discontinued.

2. The Panama Railroad Company will, on or about December 22, place on sale with all ticket agents first-class half-rate mileage books, which will be sold to employes of the United States Government and the Panama Railroad for $5.00 and $10.00 each for 200-mile and 400-mile books respectively.

3. These books can be purchased only by the presentation of a validated request, Form No. C. E. 319.

4. The employes desiring to purchase a mileage book will fill out two copies of this request, which will be forwarded direct to the Chief Clerk, Chairman's Office, Culebra, if employed by the Commission, the Commissary Department or the P. R. R. Relocation; and direct to the Chief Clerk, General Superintendent's Office, Colon, if employed by the Panama Railroad Company. After being checked and validated, a copy of the request will be returned to the employe and will be his authority to purchase a mileage book.

5. Blank forms of the request for mileage books will be distributed to the department and division offices and the timekeeping offices, so that they will be easily obtainable by any employe desiring them.

6. Unnused mileage remaining in a book upon which the time limit has expired, or at the employe's termination of service, will be redeemed on presentation to the Local Auditor of the P. R. R.

7. These books will be issued only to employes on the gold roll and for only first-class transportation.

8. The number of $10.00 books issued for use of an employe and his family is not limited, but not more than one $5.00 book will be issued to an employe within any calendar month.

9. The books will be good for the use of the employe and any member of his family residing with him. The members of his family who will use the book must be indicated on the request in the space provided for that purpose.

10. The attention of employes is directed to the fact that the sale or transfer of the half-rate privilege to another constitutes a misdemeanor according to decisions of the Canal Zone Courts, which is punishable by a fine or imprisonment, or both, and in addition they may be punished by dismissal from the service.

11. Employes purchasing books are required to sign with ink the contract on the book's cover.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending January 3, 1912, (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
December 28....	......	2.43	8.32	2.57	9.03
December 29....	......	3.35	9.28	3.50	10.00
December 30....	......	4.32	10.30	4.50	10.58
December 31....	......	5.32	11.35	5.53	11.59
			P.M.		
January 1......	......	6.18	12.34	6.50	......
January 2......	12.57	7.28	1.37	7.50	......
January 3......	1.55	8.22	2.34	8.46	......

Rainfall from December 1 to 23, 1911, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	.66	20	1.73
Balboa	.50	20	1.11
*Miraflores	.72	10	1.34
Pedro Miguel	1.45	9	1.67
Rio Grande	1.06	9	1 10
Central Section—			
Culebra	.18	9	.22
*Camacho	.91	9	1.20
Empire	.07	13	.09
Gamboa	.39	11	.65
*Juna Mina	.23	8	.47
Alhajuela	.09	1	.15
*El Vigia	.05	2	.14
*Gorgona	.20	11	.86
San Pablo	.15	11	.33
Tabernilla	.09	9	.24
Bohio	.30	7	1.19
*Monte Lirio	.41	6	1.74
Atlantic Section—			
Gatun	.73	8	1.82
*Brazos Brook	.37	13	1.65
Colon	.86	9	2.29
Porto Bello	.23	2	† 84

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5.00 p. m. December 22.

LOST—In Colon or on Panama railroad train, Sunday, December 10, a diploma. A reward is offered if returned to G. H. Dunston, Room 6, House 106, Empire.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, December 16, 1911. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Dec. 10..	126.2	92.7	45.4	14.8	14.7
Mon., Dec. 11..	126.2	92.6	45.4	14.7	14.6
Tues., Dec. 12.	126.2	92.6	45.4	14.6	14.5
Wed., Dec. 13..	126.2	92.6	45.4	14.4	14.4
Thurs., Dec. 14.	126.1	92.5	45.3	14.2	14.2
Fri., Dec. 15...	126.0	92.5	45.2	14.1	14.1
Sat., Dec. 16...	126.0	92.4	45.2	14.0	14.0
Height of low water.......	125.0	92.0	44.0		
WEEK ENDING DECEMBER 23, 1911					
Sun. Dec. 17..	126 0	92.4	45.2	14.0	14.0
Mon. Dec. 18..	126.0	92.4	45.1	13.8	13.8
Tues. Dec. 19..	125.9	92.4	45.1	13.8	13.7
Wed. Dec. 20..	125.9	92.4	45.0	13.8	13.7
Thurs. Dec. 21.	125.9	92.3	45.0	13.8	13.7
Fri., Dec. 22..	126.0	92.4	45.0	13.8	13.7
Sat., Dec. 23..	126.1	92.6	45.1	13.8	13.7
Height of low water.. ..	125.0	92.0	44.0		

Married.

HALDEMAN-WRIGHT—At the I. C. C. Chapel in Empire, on December 14, Bessire Gabrilla Wright of Gorgona, to Ezra Peter Haldeman, of Gorgona, the Rev. A. A. Nellis officiating. Canal Zone residence, Gorgona.

WILCOX-SCHILLING—At Cristobal on December 20, Helen Genevieve Schilling to Albert Louis Wilcox, both of San Francisco, California, the Rev. Carl H. Elliot officiating.

ROOS-KITTRELL—At Cristobal on December 20, Anna Emma Kittrell to Herman August Roos, both of Newark, N. J., the Rev. Carl H. Elliott officiating. Canal Zone residence Culebra.

NELSON-SAARI—At Cristobal on December 20, Lina Susanna Saari of Saasa, Finland, to John Iver Nelson of Tamford, Finland, the Rev. Carl H. Elliott officiating. Canal Zone residence Gatun.

PALMER-HALL—On December 23, at the home of Mr. and Mrs. J. H. K. Humphrey, Corozal, Ruth Hall of Detroit, Mich., to Eugene W. Palmer of Washington, D. C., Chaplain H. A. Brown officiating. Canal Zone residence, Culebra.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Corozal, C. Z., Sunday, December 31, 1911, at 7.30 p. m. The program follows:

1. March—*In the Land of Harmony*........Snyder
2. Selection—*Naughty Marietta*.............Herbert
3. Duet for Cornets—*Bolero*.................Hall
   Messrs. Bernell and Sanmartin.
4. Overture—*Jeanne Maillotte*.............Reynaud
5. (*a*) Cake Walk—*A Coon Band Contest*.....Berlin
   (*b*) Two Step—*Alexander's Ragtime Band*.............Berlin
6. Intermezzo—*Gretchen*.................Martin
7. Medley Selection—*Stern's American-European Hits*.......Williams
8. Reverie—*Thoughts of Home*....Chas. E. Jennings
9. March—*Stop, Stop, Stop*.................Berlin

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Paraiso, January 7, 1912, at 7.30 p m.

LOST—At Culebra on December 14, an open face screw case watch, size about No. 18, B. W. Raymond, Elgin works with 17 jewels. Reward is offered for its its return to the District Quartermaster's office at Culebra, or to A. Mantooth, Culebra corral.

LOST—Between Gorgona and Culebra, a small plain gold locket with script engraving of the letters "R. E. W." Return to R. E. Withrow, Gorgona.

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to October 31, follows:

PERIODS.	Department of Civil Administration	Department of Law	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total.
To June 30, 1909	3,427,090.29	....	9,673,539.28	69,622,561.42	78,022,606.10	....	160,745,797.09
Fiscal year, 1910	709,351.37	....	1,803,040.95	26,300,167.05	2,863,088.83	....	31,675,648.20
Fiscal year, 1911	755,079.44	....	1,717,792.62	27,463,401.31	3,112,334.60	....	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,089,361.82	312,920.11	....	2,615,340.33
August, 1911	74,768.45	1,878.27	156,954.79	2,287,506.30	355,087.42	86,243.14	2,962,438.37
September, 1911	64,905.24	1,805.83	146,912.23	2,212,702.66	234,233.58	86,275.56	2,746,835.10
October, 1911	64,143.49	1,586.71	152,252.71	2,751,377.24	323,154.80	32,061.45	3,324,576.40
Total	5,168,233.50	7,798.16	13,788,128.41	132,727,077.80	85,223,425.44	204,580.15	237,119,243.46

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning December 25, 1911.

FRESH MEATS.	Price.
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	*16
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24

MISCELLANEOUS.	
Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Veal, per pound	1.20
Beef, per pound	25
Eggs, fresh, dozen	39
one-half dozen only	20
Bluefish, fresh, per pound	14
Halibut, fresh, per pound	15
Oysters, 1 qt. kegs, per keg	50

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each 60, 70, 80, 90.	1.00
Ducks, Western, about 4½ pounds, each	1.00
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	28
Squabs, each	35
Capons, each	2.10
Grouse, each	50

CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30

DAIRY PRODUCTS.	
Butter—Creamery special, per pound	39
Cheese—Roquefort, per pound	45
Philadelphia cream, cake	10
Young America, per pound	20
Swiss, per pound	26
Edam, each	1.00
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**25
Buttermilk, bottle	**15
Fer-mil-lac, bottle	**25

	Price.
Ice cream, quart	‡25
½-gallon	‡50

VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	6
Cabbage, per pound	4
Cucumbers, oer pound	12
Carrots, per pound	3
Lettuce, per pound	12
Onions, per pound	3½
Potatoes, white, per pound	3½
sweet, per pound	2
Parsnips, per pound	4
Parsley, per pound	10
Squash, per pound	3
Turnips, per pound	3
Yams, per pound	3
Apples, per pound	5
Cranberries, per pound	9
Grapes, per pound	10
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12
Pears, per pound	10

---

*Indicates reduction from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
‡Sold only from commissaries; no orders taken for delivery

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending December 16:

Acapulco, December 9, from San Francisco, with 19 bales dredging sleeves, for Atlantic Division.

Konsas City, December 10, from San Francisco, with 100 coils manila rope, for stock.

Alcona, December 11, from Baltimore, with 30 crates castings, 560 pieces lock material, 110 cases lock material, 14 bundles lock material, 2,793 pieces steel ties, 187 bundles rack railway material, 122 pieces rack railway material, for Atlantic Division; 300 bundles rack railway material, 186 pieces rack railway material, for Pacific Division; 482 pieces white oak lumber, 297 pieces car couplers, 131 pieces knuckles, for Mechanical Division; 1,720 pieces steel plates, 200 kegs rivets, for Panama Railroad Company; 3,259 bundles splice bars, 465 bundles steel bars, 3,287 pieces steel bars, angles, etc., 333 bundles galvanized roofing, 15 bundles padboard, 189 tons blacksmith coal, for stock.

Indianapolis, December 14, from Savannah, with 30,871 pieces cross ties, for stock.

Zocapa, December 14, from New York, with 35 cases window glass, 21 cases fuse, for stock.

Turriolba, December 14, from New Orleans, with 26 bundles castings, 24 pieces castings, 75 cases brass bolts or Atlantic Division; 123 cases brass bolts, for Pacific Division; 543 pieces creosoted ties, for Panama Railroad Company; 107 pieces white oak lumber, 156 pieces yellow pine lumber, for Mechanical Division; 7,422 pieces yellow pine lumber, 162 pieces piling, 123 barrels fire clay, 315 sacks dairy feed, 9 crates stoves and parts, 10 barrels galvanized clips, 56 pieces steam shovel castings, for stock.

Advance, December 14, from New York, with 25 cases rubber boots, 5 cases electrical material, 6 reels steel cables, for Atlantic Division; 25 cases rubber boots, 223 bundles steel bars, for Pacific Division; 29 cases drugs and sundries, for Sanitary Department; 93 cases window frames, for Panama Railroad Company; 18 cases rubber packing, 12 reels steel cables, 1,000 kegs bolts, 100 cases liquid exterminator, 13 cases meat blocks, 14 cases rubber hose, 100 cases oxide of zinc, 12 cases car seals, 17 drums lime, 72 kegs nails, 1,082 bags coke, 10 barrels lard oil, 34 cases castings, 20 cases wool waste, for stock; and a miscellaneous cargo, the whole consisting of 3,000 packages weighing 264 tons.

The following ships arrived at, or departed from the port of Balboa during the two weeks ending December 23:

Arrivals—December 11, *Guotemala*, from Callao; December 12, *Mantoro*, from Callao; December 14, *Chile*, from Guayaquil.

Departures—December 11, *Pennsylvania*, to San Francisco; December 11, *Pachitea*, to Callao; December 12, *Riverside*, to San Francisco; December 13, *Palena*, to Valparaiso; December 16, *Mantaro*, to Callao.

Arrivals—December 17, *Tricolor*, from North; December 17, *Monavi*, from Buenaventura; December 18, *Mango Revo*, from San Francisco; December 18, *Ucuyali*, from Callao; December 20, *Aysen*, from Valparaiso; December 21, *Pleiades*, from San Francisco.

Departures—December 18, *Guatemala*, to Callao; December 18, *Quito*, to Guayaquil; December 19, *Acapulco*, to San Francisco; December 19, *Chile* to Guayaquil; December 19, *Konsos City*, to San Francisco; December 20, *Bobcock*, to San Francisco; December 21, *Mackinaw*, to San Francisco; December 23, *Monovi*, to Buenaventura.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Colon	P.R.R.	Wednesday	Dec.	27
Advance	P. R. R.	Tuesday	Jan.	2
Panama	P. R. R.	Tuesday	Jan.	9
Allianca	P. R. R.	Monday	Jan.	15
Colon	P. R. R.	Monday	Jan.	22
Advance	P. R. R.	Saturday	Jan.	27
Panama	P. R. R.	Saturday	Feb.	3
Allianca	P. R. R.	Friday	Feb.	9
Colon	P. R. R.	Friday	Feb.	16
Advance	P. R. R.	Friday	Feb.	23
Panama	P. R. R.	Thursday	Feb.	29

CRISTOBAL TO NEW YORK.

Panama	P.R.R.	Wednesday	Dec.	27
Allianca	P. R. R.	Tuesday	Jan.	2
Colon	P. R. R.	Tuesday	Jan.	9
Advance	P. R. R.	Monday	Jan.	15
Panama	P. R. R.	Sunday	Jan.	21
Allianca	P. R. R.	Sunday	Jan.	28
Colon	P. R. R.	Saturday	Feb.	3
Advance	P. R. R.	Friday	Feb.	9
Panama	P. R. R.	Friday	Feb.	16
Allianca	P. R. R.	Thursday	Feb.	22
Colon	P. R. R.	Thursday	Feb.	29
Advance	P. R.R.	Wednesday	Mar.	6
Panama	P. R. R.	Wednesday	Mar.	13

NEW YORK TO COLON.

Santa Marta	U. F. C.	Thursday	Dec.	21
Prinz Sigismund	H.-A.	Friday	Dec.	22
Clyde	R. M.	Saturday	Dec.	23
Metapan	U. F. C.	Thursday	Dec.	28
Prinz August Wilhelm	H.-A.	Saturday	Dec.	30
Zacapa	U. F. C.	Thursday	Jan.	4
Sibiria	H.-A.	Friday	Jan.	5
Thames	R. M.	Saturday	Jan.	6
Almirante	U. F. C.	Thursday	Jan.	11
Prinz Eitel Friedrich	H.-A.	Saturday	Jan.	13
Santa Marta	U. F. C.	Thursday	Jan.	18
Prinz Sigismund	H.-A.	Friday	Jan.	19
Trent	R. M.	Saturday	Jan.	20
Metapan	U. F. C.	Thursday	Jan.	25
Prinz August Wilhelm	H.-A.	Saturday	Jan.	27
Zacapa	U. F. C.	Thursday	Feb.	1
Altai	H.-A.	Friday	Feb.	2
Oruba	R. M.	Saturday	Feb.	3

COLON TO NEW YORK.

Almirante	U. F. C.	Thursday	Dec.	28
Prinz Eitel Friedrich	H.-A.	Tuesday	Jan.	2
Santa Marta	U. F. C.	Thursday	Jan.	4
Prinz Sigismund	H.-A.	Saturday	Jan.	6
Trent	R. M.	Tuesday	Jan.	9
Metapan	U. F. C.	Thursday	Jan.	11
Prinz August Wilhelm	H.-A.	Tuesday	Jan.	16
Zacapa	U. F. C.	Thursday	Jan.	18
Sibiria	H.-A.	Saturday	Jan.	20
Oruba	R. M.	Tuesday	Jan.	23
Almirante	U. F. C.	Thursday	Jan.	25
Prinz Eitel Friedrich	H.-A.	Tuesday	Jan.	30
Santa Marta	U. F. C.	Thursday	Feb.	1
Prinz Sigismund	H.-A.	Saturday	Feb.	3
Magdalena	R. M.	Tuesday	Feb.	6

NEW ORLEANS TO COLON.

Atenas	U. F. C.	Saturday	Dec.	23
Parismina	U. F. C.	Wednesday	Dec.	27
Turrialba	U. F. C.	Saturday	Dec	30
Cartago	U. F. C.	Wednesday	Jan.	3
Abangarez	U. F. C.	Saturday	Jan.	6
Herdia	U. F. C.	Wednesday	Jan.	10
Atenas	U. F. C.	Saturday	Jan.	13
Parismina	U. F. C.	Wednesday	Jan.	17

COLON TO NEW ORLEANS.

Abangarez	U. F. C.	Thursday	Dec.	28
Heredia	U. F. C.	Thursday	Dec.	28
Atenas	U. F. C.	Thursday	Jan.	4
Parismina	U. F. C.	Thursday	Jan.	4
Turrialba	U. F. C.	Thursday	Jan.	11
Cartago	U. F. C.	Thursday	Jan.	11
Abangarez	U. F. C.	Thursday	Jan.	18
Heredia	U. F. C.	Thursday	Jan.	18

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages. The *Altai* cabins are all sold at second cabin rates.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct leave on Thursdays at 3 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JANUARY 3, 1912. No. 19.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

The Dredge Culebra.

The sea-going suction dredge *Culebra* is on the ways at the Balboa yards for repairs, which will consist mainly of general overhauling. This is the first time the *Culebra* has been under general repairs since February, 1910. It was commissioned January 21, 1908. The *Caribbean*, a sister ship of the *Culebra*, has been excavating in the Atlantic entrance to the Canal. These dredges were bought from the Maryland Steel Co., Sparrows Point, Md., in 1907. Since the beginning of its service the *Culebra* has excavated 13,195,388 cubic yards of silt and clay. Its highest monthly record—522,577 cubic yards—was made in the month of March, 1908. Its normal crew consists of 69 men.

Excavation at San Pablo.

On January 2 a steamshovel began work east of the Panama railroad track at San Pablo on a mound of earth that rises in the Canal prism at this point. A shovel has been clearing the bottom of the channel at this point for several weeks, but this is the first excavation on the hill which must be removed before the Canal is completed in this section.

Completion of Hydraulic Fill for Miraflores Dam.

The hydraulic fill for the core of the west dam at Miraflores has been completed, and while the water is draining from the silt through a sluice at the north end of the dam, earth and rock are being dumped on the sides of the mass, closing in toward the center. The height of the hydraulic fill is now at elevation +59; the dumping of heavy material on the sides will force it higher and the top of the dam will be 70 feet above sealevel, or 15 feet above the normal surface of Miraflores Lake. The average head to which the dam will be subjected is 30 feet, the maximum, 40 feet.

Water Supply in Central Section.

An increase in the population of the section served by the Comacho reservoir water system, and a probable shortage in the amount of water stored on account of the early beginning of the dry season, have made it necessary to provide for pumping water from the Chagres River to supplement the reservoir supply. Two 3-stage 8-inch centrifugal pumps will be mounted on the south channel pier of the railroad bridge at Gamboa and will pump into the main at that point. These pumps are rated to deliver the equivalent of 1,500 gallons of water per minute each against a head of 150 pounds. They would therefore be capable of delivering over 3,000,000 gallons a day, but it is probable that only one of them will be in service at a time, except in emergencies.

The territory served from the Comacho system extends from Bas Obispo to West Culebra, inclusive, and includes besides 3 villages, the Marine camp, the camp of the 10th Infantry, a part of Culebra Cut with its steamshovels and locomotives, and the dumps on the relocation of the Panama railroad north of Gamboa. Last year the average consumption was two million gallons a day from the reservoir, and in addition, about 1,500,000 gallons, pumped into the mains by the small pumps at Bas Obispo on the Madingo River, LaPita and Lirio on the Obispo River, a station on the Chagres at Gamboa, and one on the Camacho River below the reservoir.

At present the daily consumption runs about 2,500,000 gallons from the Camacho Reservoir and pumping station. Camacho Reservoir has a capacity of 313,367,000 gallons, and at the close of December it was about 88,000,000 gallons short of the supply stored at that time last year. The flow of water into the reservoir is so small at present that it does not make up for the evaporation. The water from the Chagres comes from a region little inhabited and is sufficiently pure to be used for drinking. Drinking water is supplied in the various canal villages, however, from the condensing plants. Mandingo River water, potable last year, is no longer considered safe, on account of the increase in the number of inhabitants along the course, including the penitentiary prisoners at the Mandingo stockade.

Swamp Reclamation.

The reclamation of swamp lands between the Canal channel and the Panama railroad, from Miraflores to Corozal, is proceeding from the north. The lowlands are being raised by means of silt pumped from the hydraulic excavation south of Miraflores Locks and in order to preserve the diversion channel of the Rio Grande and the drainage facilities, dikes are built where necessary. About two hundred yards north of Corozal Junction a dike has been built between the Pacific Division tracks and a knoll, which extends to the east bank of the Rio Grande diversion, along the bank of which a bulkhead prevents the silt from escaping into the stream. Since the discontinuance of hydraulic filling in Miraflores Dam, all the spoil from the excavation by monitors will be used for swamp reclamation, which will advance more rapidly.

Clearing the Anchorage Basin at Gatun.

About February 16 the Central Division will set two steamshovels at work removing the embankment upon which the present line of the Panama railroad crosses the Gatun River bottom at Gatun. This embankment was made to carry the relocation of the railroad before the present relocation was determined upon, and has been used since then as the means of joining the new railway line with the old from Gatun to Tiger Hill, in which section the old line was covered by Gatun Dam. The embankment is about 1¼ miles long, and it cuts in two parts the anchorage basin at the south end of Gatun Locks, and therefore must be removed.

New Clamps for All Steamshovels.

The foundry at the Gorgona Shops is preparing to cast fifty more of the steel rail clamps for steamshovels, which were invented by W. H. Bates, Superintendent of Steamshovel Repairs, and adopted after a six months' trial. Upon adoption it was ordered that 350 be put in use; the additional clamps now to be cast will be sufficient to equip the remainder of the steamshovels in service. A description of the clamp was published in THE CANAL RECORD for November 1, 1911.

Dredges in Atlantic Approach Channel.

The 18-inch suction dredge *No. 4* was taken from the dry dock at Mount Hope during last week and placed at work in the approach channel between Mindi and Gatun Locks, in place of the 20-inch suction dredge *Sandpiper*, which was withdrawn for repairs at the dry dock. When repaired, the *Sandpiper* will return to work alongside *No. 4*. The latter, which was commissioned on August 15, 1910, was engaged until November 16, 1911, in excavating sand at Nombre de Dios for the Atlantic Division.

Transfer of Compressors.

In the transfer of air compressors from the plant at Las Cascadas to the Agua Dulce hydraulic station, south of Miraflores Locks, one compressor has been installed on a concrete foundation just north of the power house, which will be extended to cover it. The installation of the second is now under way. Boilers for the compressors will be placed directly back of them. Investigation has shown that it will be practicable to operate them under pressure of 150 pounds to the square inch, which makes it necessary to move only two boilers instead of three.

Rack Track Installation.

The first consignment of towing track, consisting of sixty sections of rack track, each six feet in length, has arrived at Gatun locks. Delivery will continue from January 1, 1912,

NOTES OF PROGRESS.

(Continued.)

at the rate of 240 sections each week, which will complete final deliveries for all three sets of locks by October 1, 1912. Installation of the rack track has been started in the east side wall.

At each set of locks the towing system consists of seven lines of track, all running the entire length of the locks. Four tracks, two for the center wall and one for each side wall, are for towing and are equipped with a rack. Three racks, one for each of the walls, are used to return the locomotives when not towing a ship. Each of the tracks is constructed of a pair of ninety-pound rails bolted to Carnegie steel ties. The ties for towing tracks are spaced upon 3-foot centers, and the ties for the return track have 3-foot 9-inch centers. The towing tracks and the return track at the inclines are, in addition, equipped with a cast steel rack, the rails alone not developing sufficient tractive effort. The rack is located upon the centerline between rails and projects seven inches above the top of the rails. All tracks are equipped with conductor rails on the off-tow side of the track.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 74 per cent completed, 166,713 cubic yards, out of a total of 225,000, having been placed at the close of work on December 30. A statement of the amount laid each working day last week, and of the total in place, follows;

Date.	Concrete Laid.	Hours worked.	No. Mixers.
December 25			
December 26	32	1.45	1
December 27	120	9.00	2
December 28	200	11.45	2
December 29	148	13.00	2
December 30	264	16.00	2
Total	764	51.30	1.8
Previously reported	165,949		
Grand total	166,713		

Ancon Crusher.

Date.	Hours worked.	Cubic Yards.
December 25	Holiday	
December 26	7.10	2,973
December 27	8.05	2,746
December 28	7.15	2,807
December 29	7.30	2,819
December 30	7.45	3,305
Total	37.45	14,650

Porto Bello Crusher.

Date.	Hours worked.	Cubic Yards.
December 26	3.09	1,485
December 27	4.06	1,863
December 28	4.08	1,871
December 29	3.37	1,800
December 30	3.46	1,740
Total	18.46	8,759

Red Cross General Meeting.

A public reception will be given by the Canal Zone Chapter, National Red Cross, to Miss Mabel T. Boardman, Chairman of the Executive Committee of the National Red Cross, who is about to visit the Isthmus. It will be held in the National Theater at Panama at 8.30 o'clock in the evening of January 13. Addresses will be delivered by Col. Geo. W. Goethals and Miss Boardman.

Members of the Red Cross may obtain tickets of admission from the local Red Cross chairmen, district quartermasters, Y. M. C. A. secretaries, or from the Chairman or Secretary of the Red Cross at Culebra. The President of Panama, and his cabinet, members of the diplomatic corps and prominent officials of the Republic and the Canal Zone will be invited.

Extra cars on the Saturday night trains from Colon to Panama will be reserved for persons attending the lecture. The fare of $1.00 will include membership in the Red Cross for the ensuing year, admission to the theater, and transportation both ways.

CONCRETE WORK IN THE LOCKS.

Over 75 per cent of the concrete for the locks is in place, the amount at the close of work on December 30, being 3,149,865½, cubic yards, out of a total of approximately 4,199,400. A total of 21,138½ cubic yards of concrete was laid in the locks during the week ending December 30.

GATUN LOCKS.

Over 88 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on December 30 being 1,765,482½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending December 30, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
December 25								
December 26	1,100	17.46	4	292	3.40	2	0	1,454
December 27	1,038	17.26	2	376	4.40	2	32	1,521
December 28	1,384	34.48	6	388	4.40	2	40	1,874
December 29	956	15.42	4	466	5.40	2	66	1,561½
December 30	1,388	23.45	5	498	5.40	2	0	1,946
Portable mixers				332.5				
Totals	5,866	109.27	4.2	2,352.5	24.20	2	138	8,356½
Previously Reported								1,757,126
Grand Total								1,765,482½

*The 332.5 yards shown for the portable mixers are reinforced concrete, and were placed on the following days: December 26th, 62; December 27th, 75; December 28th, 62; December 29th, 73.5; December 30th, 60.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 94 per cent completed, 790,537 cubic yards, out of a total of 837,400 bucket measurement, having been placed at the close of work on December 30. The record for each of the six 8-hour working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
December 25								
December 26	308	9.50	2	228	24.00	3		536
December 27	258	8.00	2	231	18.50	3		489
December 28	276	8.50	2	260	19.50	3		536
December 29	382	11.50	2	232	15.25	2		614
December 30	288	8.50	2	300	28.50	3		588
Total	1,512	46.00	2	1,251	100.75	2.8		2,763
Previously Reported							4,423	787,774
Grand Total							4,423	790,537

MIRAFLORES LOCKS.

Over 43 per cent of the concrete for the system of two twin locks at Miraflores was in place on December 30, the total amount on that date being 594,116 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour woking days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.	Cu. Yds.					Cu. Yds.			Cu. Yds.	Cu. Yds.
Dec. 24				108	2.17	2					108
Dec. 25											
Dec. 26	1,460	40.00	7	508	8.00	2	264	21.00	4		2,232
Dec. 27	1,092	31.92	7	440	6.90	2	176	8.00	1		1,708
Dec. 28	1,406	39.00	7	390	6.25	2	174	17.50	3		1,970
Dec. 29	1,218	33.83	7	418	6.30	2	207	11.50	2		1,843
Dec. 30	1,498	38.58	7	436	6.83	2	224	12.50	2		2,158
Total	6,674	183.33	7	2,300	36.45	2	1,045	70.50	2.4		10019
Previously Reported										3,693	584,097
Grand Total										3,693	594,116

IN PLACE OF THEATERS.

How Canal Workers Amuse Themselves During the Theater Season.

THE CANAL RECORD:

As the Canal work draws towards a close and it becomes evident to even the casual observer that the problems of engineering and construction have been solved, interest in social conditions increases, and the paragraphs here written are an answer to one of the questions frequently asked—"what is there to take the place of the theater?" Unfortunately no data are available, either here or in the United States, to enable a comparison to be made; but it is the opinion of careful observers that the American Canal workers have as many breaks, and on the average of as good quality, in the routine of their lives as they had in the villages and cities in the United States which they left to come to Panama.

In the foreground a stretch of barren rolling plain, blue in the distance mountains fret the sky, such a view as one gets in those Western states where the prairies meet the hills; from behind a knoll trots a cavalcade of pioneers and trailing behind them is a "prairie schooner." There is a sudden halt, a woman gesticulates wildly, and the horsemen put about on a gallop. Scene follows scene, and in the sum of them everyone knows that a baby has been lost from the wagon, found by an indian, rescued by the pioneers, stolen by the indians, and again rescued after much effort and the killing of ever so many red men, not all killed at one time, either, but picked off, one by one, so that the boys in the front seats may applaud each rightful death.

A little pause, and a beggar comes into a toy store, steals a toy and runs. He is followed by the storekeeper, two clerks, several policemen, and a large crowd. Running, the thief meets a man on a bicycle, knocks him off, speeds away, still followed by the police. He meets a man with an aeroplane, runs into the machine and sails off into the air, just as his capture is almost certain. Above the tops of tall buildings, higher that the church steeples, he sails along, while the police try to bring him to earth with revolver, rifle and cannon shots, but unsuccessfully. Then a small boy with a popgun takes careless aim and the thief falls to earth.

Another pause, and one sees the telegraph office where the handsome man is teaching the daughter of the general manager how to send a message. In the course of six scenes the knowledge the beautiful daughter gains of the telegraph code makes it possible for the handsome man (now garbed in opera hat and cloak) to rescue her and her stern father from the office safe in which they have been imprisoned.

These and other similar comedies were enacted in six Canal Zone settlements on as many different nights last week. Two generations distant from the days of prairie schooners, two thousand miles away from an aeroplane, and the nearest opera cloak probably in New Orleans, the Canal workers saw and enjoyed these crucial situations in a dozen lives. At Empire and Cristobal the slaughter of indians caused greatest applause, at Gorgona the spectators sympathized most with the beggar balking the police, and at Culebra, Corozal, and Gatun there was a distinct leaning toward the romance of the girl and the telegrapher. A very matter of fact young man ground out these short stories by turning the crank of a moving picture machine at the Commission clubhouses, while in each village a crowd, larger than the hall could seat, (between two and three hundred) watched every move in the multiple drama. Each week, in each of the villages mentioned, this same machine grinds out as many stories, each week a new series, and each time there are indians or such like to please the children of all ages, a heart romance for the sentimental and laughable situations for those who appreciate the ludicrous.

As a concession to the popular demand for ballads and rag-time songs the clubhouse management has this week begun a series of illustrated song entertainments to be a part of the moving picture shows. The machine will grind out a series of scenes illustrative of a song and some local singer will sing the words. The scope of these song scenes is broad, and it is the intention not to confine them to the cheap ballads.

The first entertainment attempted by the American Canal workers was a minstrel show at the old Sara Bernhardt theater in Panama in October, 1905. It followed the lines of the conventional minstrel show, with jokes vamped over to fit local conditions or to refer to prominent or popular Canal employes. A more elaborate entertainment of this class was the "show" by the Culebra Minstrels on November 8, 1907, at the newly finished clubhouse in Culebra. In the audience were prominent Canal officials and members of a Congressional party that was visiting the Isthmus. THE CANAL RECORD of November 13, 1907 contains an account of this entertainment. In the issues that have been published since then, each of the entertainments of this class by regularly organized bodies of Canal workers has been noted. Each year since 1907 there has been a minstrel troupe which has given entertainments at the Commission clubhouses. Other entertainments of a vaudeville character have also been held, usually for some special purpose, such as procuring money for a church or other organization. This year the Gorgona Minstrels have just completed a successful season, and the Empire Minstrels are preparing to give a series of entertainments. The appeal of these "shows" to the Canal workers is that they introduce a number of local jokes, or old jokes devoted to local use.

Plays have not been so popular as minstrel shows, probably because the local features are lacking, and that it is necessary to act plays that many of the Canal workers have seen presented by professional actors. Then, too, there is the amateur's dread of being laughed at, and the inability of the spectator to enter into the illusion of a play in which the actors are known to him. It is easy to turn a scene intended to be solemn into a ludicrous one. In a comedy acted two years ago it was the part of one of the characters to offer twenty-five thousand dollars to save his beloved but erring nephew from prison. Now the actor was known in his home town on the Canal Zone as one who had little money, and his generous offer therefore caused a smile. Yet when the play was presented in other villages, this part impressed no one as ludicrous. Among the more noteworthy dramatic efforts by Canal builders are "Captain Racket," which was played by the Gorgona Dramatic Club in several Canal Zone villages and ended its season with a benefit performance for The Red Cross at the National Theater in Panama on Labor Day, 1909. It was estimated that three thousand people out of a possible 8,000 saw the play in all its performances. On August 20, 1910 the Ancon Dramatic Club played "The Private Secretary" at the National Theater in Panama for the benefit of the organ fund of St. Luke's Church, Ancon; and a few months later played "Lady Windermer's Fan."

An opportunity for amateur theatricals that has not been availed of is that afforded by the brilliant moonlight nights of the dry season for outdoor performances. In every village there is a hillside capable of being turned into an amphitheatre at little expense. The objection of "red bugs" is not valid since the ticks do not interfere with golf at Culebra and baseball at other places.

Last year a choral society was organized at Empire and rendered effectively several oratorios. This year a similar society is practising at Gatun, and a glee club is being rounded into shape at Culebra, for a tour of tht Canal villages.

All of these entertainments are held in the Commission clubhouses, where there is a large hall with a stage at one end. Here moving pictures are exhibited, and the annual Christmas exercises, concerts, semi-monthly dances, plays, and Sunday evening religious exercises are held. There is nothing incongruous in this, because the most active entertainers in each community are alike earnest in religious and secular work.

The season for professional entertainment on the Canal Zone is the summer, when lyceum readers, singers, and musicians not busy in the States come here and give entertainments in the Commission clubhouses. This is also the time that lecturers choose. Adresses by distinguished visitors, however, are given throughout the year. Thus it happens that the Canal workers have had opportunities to hear Presidents Roosevelt and Taft, and other prominent Americans.

No reference has been made here to the opera and plays by professional companies at the National Theater in Panama, because these are in the Spanish language, yet the Canal workers form no small part of the audience.

My object in thus calling attention to what has been done is to stimulate further efforts in the dramatic line; so that the Canal worker's entertainment this year may not be confined to minstrel shows, and moving pictures.

INTERLOCUTOR.

Culebra, C. Z., January 1, 1912.

PERSONAL.

Lieut.-Gen. Sir Robert Baden-Powell, of the British Army, retired, founder of the Boy Scout movement, will be a visitor to the Isthmus during the week of January 10.

Civil Service Examinations.

Applications will be received until the close of business on January 8, for the following examinations, to be held probably the last week in January: Stenographer and typewriter, Isthmian Canal and Philippine services; typewriter, Isthmian Canal service. In requesting information and application blanks for any of the above, the name of the examination desired should be stated.

No one should report for examination before ascertaining the exact date on which the examination will be held.

JOHN K. BAXTER,
Secretary, Isthmian Civil Service Board.

BOILER INSPECTION.

Work of the Service Doing Local Inspection—Steamboat Inspection.

There are two branches of boiler inspection in the Canal Zone, one for boilers in local use, including all Canal and Panama railroad equipment except Panama railroad marine boilers, and the other, under the steamboat inspection board, for boilers in seagoing vessels of commercial companies.

The inspection service was organized on June 1, 1907. Prior to that time there had been no regular inspection, and the colored firemen were accustomed to put as much pressure on a boiler as they thought it would stand. There was a large number of old French boilers in the service, and although many of these had been in the shops for repairs, none were in so good condition as new boilers would have been, and their exact rating was not known. Notwithstanding this, and the further fact that there are nearly a thousand boilers in use on the Canal and railroad, there has been only one explosion since the American occupation.

In November, 1909, when the Mechanical Division was reorganized, the boiler inspection service was placed under the direction of the Mechanical Engineer of the Mechanical Division. At present the work is carried on in five districts as follows:

District No. 1—All marine boilers; all boilers at Culebra Island, Flamenco Island, Porto Bello, Toro Point, and Nombre de Dios, with exception of locomotives; 160 boilers.

District No. 2—All boilers from Gorgona to and including Colon, except locomotives, and all at Gorgona except boilers working in shops; 215 boilers.

District No. 3—All boilers from Gorgona to and including Balboa, except locomotives; 235 boilers.

District No. 4—All locomotive boilers; 330 boilers.

District No. 5—All boilers at Gorgona shops, and all sent to shops for repairs; 17 located permanently at Gorgona shops, and about 35 each month on such equipment as has been repaired in shops, same being inspected before being put in service.

Inspections are made at the present time in accordance with the Boiler Inspection Rules and Regulations, effective, September 1, 1911. The basis of the work is expressed in the following paragraph:

> The safe working pressure for boilers shall be determined and fixed by the head of the Boiler Inspection Service. This pressure shall be determined from calculations, detailed examination and, after consideration of the general design, workmanship, and general condition of boiler, giving full weight to the service required of the boiler and the conditions under which it is to operate. In determining the safe working pressure, the head of the Boiler Inspection Service shall fix this working pressure, using a factor of safety not lower than 4.5, except in special cases, when the service demands a higher pressure and a change of boilers is impracticable, in which case a minimum factor of safety of 4.0 may be permitted. Whenever the allowable working pressures set by the head of the Boiler Inspection Service are considered by operating divisions as being so low as to impair the efficiency of the plant, the division head will request re-examination and re-calculation of the boiler in question.

In order that the inspection may not interfere with the construction work, it is not so rigidly conducted as it would be by a similar service in the United States. It would often hamper the construction work to shut down equipment for repairs, and therefore repairs are made only when they are absolutely necessary, or when the equipment can be conveniently spared. When a boiler is to be shut down temporarily the district inspector is notified by telephone, and the boiler is prepared for his inspection. Every boiler is inspected once a year for hydrostatic test, once a year for interior defects, and once every six months for external defects, and these inspections are so timed that they come at about three month intervals throughout the year. All parts possible are inspected, and also such fittings as safety valves, steam gages, gage cocks, and fusible plugs. In addition to this regular inspection there is a constant watch kept upon locomotive boilers by the traveling engineers.

The falling of the crown sheet of a steamshovel boiler in Culebra Cut led to the adoption of a Central Division inspection for steamshovel boilers. This is maintained without extra expense by detailing four of the boilermakers from Empire shops to visit five shovels each, every Sunday, watch the washout, and make inspection. The men who do this are given a holiday during the week to make up for the Sunday work. Since there are about fifty shovels at work in the Cut, each boiler is inspected approximately once in three weeks. This is in addition to the inspection by the regular service, and also in addition to the inspection that a boiler is given when the shovels are taken into the shops for repairs.

One of the features of the inspection is the record kept in the office of the Mechanical Division at Gorgona of all boilers in the service. By turning to this record it can be ascertained at any time just what the condition of a boiler is, its class, capacity, age, service, tests, repairs, and latest inspection. By systematic recording a duplication of work and the probability of neglecting any boiler are avoided. A list is also kept of all boilers out of service, and these may not be returned to work until after they have passed inspection.

Boilermakers familiar with all kinds of boilers are chosen for the service, and thus practical inspection is assured. The inspectors make their reports direct to the Mechanical Engineer of the Mechanical Division, who notifies the division department heads once a week of the result of inspections. Attention is directed to the condition of the boilers, and the responsibility for repairs, or further use without repairs, then rests with the head of the division or department. In the case of locomotive boilers, the traveling engineers are also notified. When a boiler is found in dangerous condition the head of the division or department is advised at once so that the boiler may be taken out of service The inspector of locomotives works at night at the engine houses where the locomotives tie up for washout and hostling. Other inspectors arrange by telephone for the cooling down of boilers. In this way no time is wasted either by the inspectors or in the use of the boilers to be inspected.

Boilers in the service of others than the Isthmian Canal Commission or Panama railroad, such as the Union Oil Company, contractors, etc., are inspected upon request of parties owning or using them, in the same manner as regular inspections.

Inspection of boilers in vessels coming into Canal Zone waters from other ports, including the vessels of the Panama Railroad Steamship Line, is made by the Board of Local Inspectors, established for the Canal Zone under Executive Order of October 2, 1909. This Board has recently appointed its own inspector, and the inspection of boilers in common with other equipment of vessels is now in progress.

FREIGHT ON PANAMA RAILROAD.

Summary of Traffic for Quarter Ending September 30, 1911.

The tonnage of freight carried by the Panama railroad during the three months ending September 30, 1911, showed an increase of 86,678 tons, or 26 per cent, over that for the corresponding period during the year previous. The following table shows the tonnage to various destinations handled during the respective quarters:

FROM ALL POINTS TO ALL POINTS.

	July 1, to Sept. 30, 1911	July 1, to Sept. 30, 1910	Increase
Colon to Panama (through)—			
From New York and other Atlantic ports	55,029	24,610	30,419
From Gulf ports	7,071	5,932	1,139
From Europe	35,257	26,058	9,199
Total	97,357	56,600	40,757
Colon to Panama (local)			
Commercial	36,667	31,962	4,705
Isthmian Canal Commission	177,154	168,474	8,680
Company's freight	3,621	6,500	* 2,879
Total	217,442	206,936	10,506
Total westbound freight	314,799	263,536	51,263
Panama to Colon (through)—			
To Colon	61	15	46
To New York and other Atlantic ports	44,568	21,850	22,718
To Gulf ports	4,902	0	4,902
To Europe	14,072	15,598	*1,526
Total	63,603	37,463	26,140
Local			
Commercial Balboa–Panama	4,560	3,077	1,483
Panama–Colon	4,630	5,095	*465
Isthmian Canal Commission	25,172	21,426	3,746
Company's freight	6,344	1,833	4,511
Total	40,706	31,431	9,275
Total eastbound freight	104,309	68,894	35,415
Total westbound and eastbound	419,108	323,430	86,678

*Decrease

CULEBRA CUT.

Excavation in December and for 1911 Greatest of Record.

The excavation in Culebra Cut in December, 1,351,082 cubic yards, was the greatest accomplished in any December of the eight since the American canal work was begun. It brought the total for the year up to 16,596,891 cubic yards, and this is the greatest that has been accomplished in any year. The record for previous Decembers, and for previous years, compared with December, 1911 and the year 1911, follows:

EXCAVATION IN CULEBRA CUT, DECEMBER, 1904 TO 1911

December.	Cubic Yards.
1904	42,935
1905	70,630
1906	307,689
1907	1,025,485
1908	1,210,046
1909	1,152,022
1910	1,211,400
1911	1,351,082

EXCAVATION IN CULEBRA CUT, YEARS, 1904 to 1911.

Year.	Cubic Yards.
1904	243,472
1905	914,254
1906	2,702,991
1907	9,177,130
1908	13,912,453
1909	14,557,034
1910	15,398,599
1911	16,596,891
Total	73,502,824

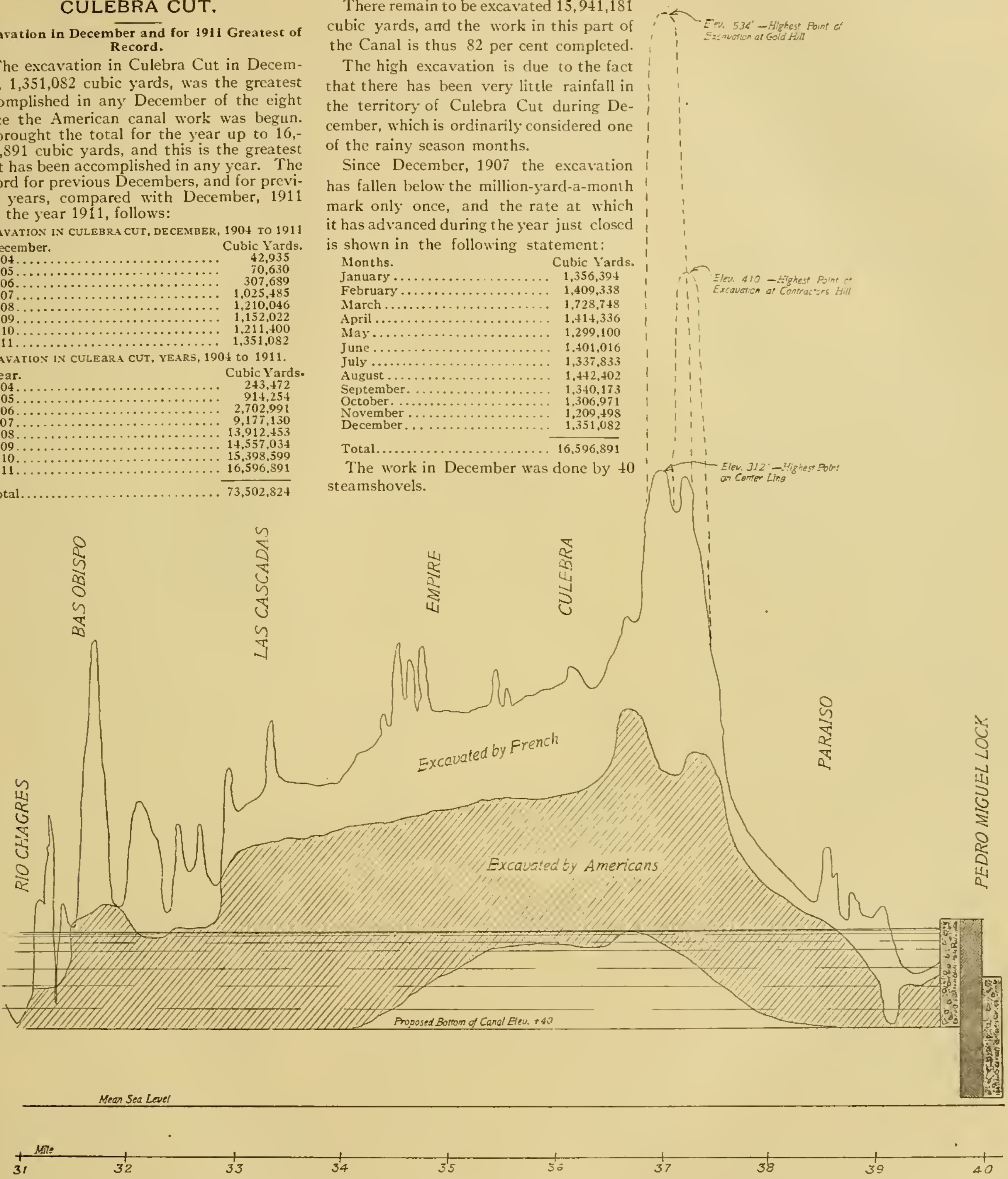
There remain to be excavated 15,941,181 cubic yards, and the work in this part of the Canal is thus 82 per cent completed.

The high excavation is due to the fact that there has been very little rainfall in the territory of Culebra Cut during December, which is ordinarily considered one of the rainy season months.

Since December, 1907 the excavation has fallen below the million-yard-a-month mark only once, and the rate at which it has advanced during the year just closed is shown in the following statement:

Months.	Cubic Yards.
January	1,356,394
February	1,409,338
March	1,728,748
April	1,414,336
May	1,299,100
June	1,401,016
July	1,337,833
August	1,442,402
September	1,340,173
October	1,306,971
November	1,209,498
December	1,351,082
Total	16,596,891

The work in December was done by 40 steamshovels.



EXCAVATION ON THE CENTER LINE IN CULEBRA CUT ON JANUARY 1, 1912.
Lowest Cut is in Drainage Ditch, but is only a single cut. Excavation is 82 per cent completed.

Panama Railroad Gravel Pit Operations.

The Panama railroad has opened up its old gravel pit about one-half mile above Gamboa Bridge and is now loading ballast cars directly from the gravel bed. Due to lack of high water during the past rainy season this old pit did not fill up as much as it has ordinarily done in the past but it is believed about 20,000 cubic yards of gravel can be secured by clam shell.

An additional gravel pit is being opened up about one mile further up stream. A spur track turning off the Central Division powder spur near the magazine is being constructed to reach this upper pit. It is necessary in this case to drive a temporary trestle across the Chagres River as the gravel bed lies on the south side. It is estimated there are 75,000 cubic yards of good gravel available in this upper pit.

Seventy-five thousand cubic yards of gravel were secured from the old pit during the last dry season which has been used to excellent advantage in ballasting the Relocated Line and in furnishing material for concrete.

SOCIAL LIFE OF THE ZONE.

Women's Organizations.

An election of officers was held by Rebekah Lodge No. 1, Gorgona, on Friday evening, December 22, when the following were elected: Mrs. George Martin, noble grand; Mrs. Anna McCann, vice-grand; Edward Wall, secretary; Harry W. Sotz, financial secretary; Mrs. Annie Calvit, treasurer. The remaining roster of officers will be filled at the installation meeting, the date of which will be determined later.

The January meetings of the Order of the Eastern Star will be held on the second and fourth Wednesday evenings in the month. Fifteen applications for membership have been filed.

The schedule of meetings for January in the Cristobal Woman's Club, with the subjects of the programs, is as follows: On January 3, at 3.30 p. m. in the commission clubhouse, general meeting with Judge Thomas E. Brown, Jr., as speaker on the question of the prevention, cure or punishment of crime; on January 10, at 3 p. m. in the clubhouse, the home department has papers on home life in Japan; on January 17, at 3 p. m. in the clubhouse, the art department will hold an exhibit of pictures with general discussion. On January 24, at 9 a. m. in the clubhouse, meeting of the executive board. On January 27, the Cristobal club will be the entertaining club for the annual meeting of the Canal Zone Federation of Woman's Clubs.

Salvation Army.

On Christmas Day one hundred and forty meals were served in the restaurant of the Salvation Army Social Institute in Colon, this being greater than the average number served on any holiday. The army will rebuild its meeting hall on the old site within a short time, and the hall on D Street, at present in use for indoor meetings will be abandoned. The annual offering raised in Harvest Festival week in November amounted to $500, which sum will be devoted, one-half to the work of the local corps; one-quarter to the divisional corps, and one-quarter to the territorial fund which is held for general work at headquarters in Kingston.

Visitation of Bishop Knight.

The following changes have been made in itinerary of the Rt. Rev. Bishop Albion W. Knight who is at present on his annual visitation to the Protestant Episcopal churches on the Isthmus: On Saturday, January 6, the ordination service will be held at St. Mark's Church, Culebra, at the time of the convocation of the clergy, and on Wednesday evening at 8 o'clock the bishop will be at St. Luke's Hospital Chapel, Ancon.

Church Notes.

The midnight service on Christmas Eve, at Christ Church By-The-Sea, Colon, was attended by a congregation of over 400. The service consisted of a full choral celebration of the Holy Communion and was of two hours' duration. This is the first time that the midnight celebration has been held in the church. On New Year's Eve the usual watch night meeting was held.

Pipe Organ at St. Luke's Church.

A small pipe organ has been installed in St. Luke's Hospital Chapel, Ancon, and was dedicated on Sunday evening, December 31, when there was a song service followed by an organ recital. The instrument is from the builder, R. Spurder Rutt of London, being one of the type especially constructed for the tropics. It has one manual, pedals, five complete stops and two hundred pipes. The case is of light oak and the visible pipes of silvered aluminum. The organ was purchased by subscription and other efforts on the part of the congregation of St. Luke's Church in 1909 and 1910.

The Little Workers, the girls' club of Gorgona, presented to the community Christmas tree 350 stockings which they made at their meetings. The club is taking a short recess but will reconvene in January, when the lessons in sewing will be resumed.

United Spanish War Veterans.

Installation of officers of Camp Chagres No. 2, will be held in the Kangaroo Hall at Empire, January 14, at 3.00 p. m. A Ladies' Auxiliary is to be formed on this date and all eligibles are requested to be there. Refreshments will be served.

Masonic Banquet.

Sojourners Lodge No. 874. A. F. and A. M. celebrated the fifteenth installation of officers by a banquet held at the Washington Hotel on Saturday evening. December 30. The dining room was decorated with palms flags, and emblems of the order. Music was furnished during the evening by the Tenth Infantry Orchestra. There were 200 ladies and gentlemen present.

Commissary Books.

The expense of issuing commissary books per book by division or department has been as follows:

Atlantic	$0.0583
Central	.0525
Pacific	.0529
Mechanical	.0507
Quartermaster	.0567
Commissary-Subsistence	.0407
Sanitation	.1137
Civil Administration	.0827
Examiner of Accounts	.0173
Disbursing Office	.0164
Total Isthmian Canal Commission	.0558
Panama Railroad Company	.0410

Rainfall from December 1 to 31, 1911, inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	.66	20	1.99
Balboa	.50	20	1.36
*Miraflores	.72	10	1.40
Pedro Miguel	1.45	9	1.82
Rio Grande	1.06	9	1.27
Central Section—			
Culebra	.18	9	.31
*Camacho	.91	9	1.34
Empire	.10	25	.20
Gamboa	.39	11	.97
*Juan Mina	.23	8	.64
Alhajuela	.22	25	.39
*El Vigia	.30	25	.45
*Gorgona	.20	11	1.01
San Pablo	.15	11	.63
Tabernilla	.17	24	.53
Bohio	.30	7	1.34
*Trinidad	.95	6	3.09
*Monte Lirio	.45	24	2.26
Atlantic Section			
Gatun	.73	8	2.25
*Brazos Brook	.37	13	1.86
Colon	.86	9	2.63

* Standard rain gage—readings at 5 p. m. daily. Automatic rain gauge at unstarrred stationA—values midnight to midnight.

EXECUTIVE ORDER.

To Prohibit the Practise of Medicine, Surgery, Dentistry, Pharmacy, or Midwifery Without a License.

By virtue of the authority vested in me I hereby establish the following order for the Canal Zone:

Section 1. It shall be unlawful for any person to practise or attempt to practise medicine, surgery, dentistry, pharmacy or midwifery within the Canal Zone without first having obtained a license therefor from the Board of Health of the Canal Zone. Any person thus offending shall be punished by a fine not exceeding Twenty Five Dollars ($25.00), or by imprisonment in jail not exceeding thirty (30) days, or by both such fine and imprisonment in the discretion of the court: *provided* that this order shall not apply to commissioned surgeons of the United States Army and Navy, or Marine Hospital Service, nor to physicians, surgeons, dentists or pharmacists and their assistants and nurses employed by the Isthmian Canal Commission, nor to nurses acting under the orders of a licensed physician.

Section 2. Whoever not having registered as aforesaid shall advertise or hold himself out to the public as a physician or surgeon by appending to his name the letters M. D. or using the title of doctor meaning thereby a doctor of medicine or shall pretend to a knowledge of medicine or surgery shall be punished by a fine not exceeding Twenty Five Dollars or by imprisonment not exceeding thirty days or by both in the discretion of the court.

Section 3. Any person shall be regarded as practising medicine within the meaning of this order who shall prescribe for, operate on, or in any wise attempt to heal, cure or alleviate, or who shall in any wise treat any disease or any physical or mental ailment of another: *provided* that nothing in this order shall be construed to prohibit (*a*) The practice of the religious tenets of any church in the ministration of the sick or suffering by mental or spiritual means without the use of any drug or material remedy whether gratuitously or for compensation provided that such sanitary laws, orders, rules and regulations as now are or hereafter may be in force in said Canal Zone are complied with; or (*b*) Gratuitous services in case of emergency; or (*c*) The administering of ordinary household remedies.

Section 4. This order shall take effect on January 1, 1912.

WM. H. TAFT.

THE WHITE HOUSE,
December 26, 1911.

Independent Order of Odd Fellows.

The District Deputy Grand Sire for the district of Panama, B. F. Sisson, will install the officers of the several Odd Fellows' lodges as follows: Isthmian Canal Lodge No. 1, Gorgona, Tuesday, January 16; Cristobal No. 2, Cristobal, Monday, January 8; Canal Zone No. 3, Empire, Saturday, January 13; Pacific No. 4, Ancon, Thursday, January 18; Gatun No. 5, Gatun, Friday, January 5; Isthmian Canal Rebekah Lodge No. 1, Gorgona, Friday, January 12.

On Christmas Day the Colon Humane Society distributed gifts and candy to 500 children in the schoolhouse, after which they went out to the public playground were the municipal band gave a concert.

OFFICIAL CIRCULARS.

Ratings and Rates of Pay.

CULEBRA, C. Z., December 26, 1911.

HEADS OF DEPARTMENTS AND DIVISIONS:

The helpers on an hourly basis of blacksmiths, boilermakers, and other mechanics will be paid in accordance with Section 38 of the Timekeeping Rules for the time actually spent by them in preparing and cleaning fires and other similar work immediately before and after each working period of four hours.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

CULEBRA, C. Z., December 27, 1911.

CIRCULAR No. 299-P.

The following designation and rate of pay is authorized in addition to those published in Circular No. 299, viz.:

Designation.	Unit.	Rate of Pay.
Coach Painter	Hr.	.65

The above designation and pay therefor will apply only to the Gorgona Shops of the Mechanical Division.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Broken Staybolts Plugged by Locomotive Engineers.

CULEBRA, C. Z., December 27, 1911.

CIRCULAR No. 259-A.

Whenever it becomes necessary for a locomotive engineer to plug a broken staybolt he must notify the engine house foreman of such action on his regular work report of that evening, stating the number and location of bolts plugged by him. Engine house foreman will notify the Mechanical Engineer of the Mechanical Division of all bolts plugged by his engine house forces, and of all bolts reported plugged by locomotive engineers.

GEO W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Meetings of Mechanical Committee.

CULEBRA, C. Z., December 27, 1911.

CIRCULAR No. 383-A.

The meetings of the Mechanical Committee appointed by Circular No. 383, dated April 18, 1911, will be held bi-monthly instead of monthly, beginning with the month of January, 1912.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Reprimand and Suspension.

CULEBRA, C. Z., December 28, 1911.

HEADS OF DEPARTMENTS AND DIVISIONS:

Your attention is directed to Circular No. 196 of August 12, directing that copies of all letters of reprimand or caution and reports of all suspensions be forwarded to this office for the personnel records maintained here. I have recently noticed that this is not being done in all cases, and that the personnel records of division offices contain numerous letters of reprimand and letters which indicate the quality of service an employe is rendering, copies of which are not furnished the files of this office. It is directed that strict attention be given to the instructions heretofore issued, and anything which would throw light on the character of an employe's service, whether it be a criticism or commendation of his work or conduct, be reported to this office by furnishing tissue carbon copies of the essential parts of the correspondence.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Shop Expense Percentage.

CULEBRA, C. Z., December 28, 1911.

HEADS OF DEPARTMENTS AND DIVISIONS:

In accordance with the provisions of Circular No. 169-E, a shop expense percentage of thirty percentum is hereby fixed for the Panama Railroad Shops, effective January 1, 1912, and will be applied, until further orders, to the distributed labor used in all shop work, in accordance with the provisions of Circular No. 264-A.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Fusible Plugs for Isthmian Canal Commission and Panama Railroad Boilers.

CULEBRA, C. Z., December 29, 1911.

CIRCULAR No. 343-C.

All fusible plugs used in boilers of the Isthmian Canal Commission and the Panama Railroad Company will be filled only by the Mechanical Division of the Commission at the Gorgona Shops.

All fusible plugs requiring refilling, that are otherwise serviceable, will be saved and turned into the Quartermaster's Department and sent by the latter to the Gorgona Shops for refilling. Lots of fusible plugs that were filled in the States, and the proper action of which has proved questionable, will be refilled by the Gorgona Shops.

The Superintendent of the Mechanical Division will have all fusible plugs filled, as far as practicable, by one employe selected for his competency to perform the work. Each plug will be legibly marked to show the employe who filled it.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Card Passes.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., December 27, 1911.

CIRCULAR No. 332.

All 1911 Annual Card Passes will be honored for passage up to and including January 15, 1912.

J. A. SMITH, *General Superintendent.*

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Paraiso, C. Z., Sunday, January 7, 1912, at 2 p. m. The program follows:

1. March—*In the Land of Harmony*........Snyder
2. Selection—*Naughty Marietta*............Herbert
3. Duet for Cornets—*Bolero*..................Hall
   Messrs. Bernell and Sanmartin.
4. Overture—*Jeanne Maillotte*............Reynaud
5. Two Step—*Alexander's Ragtime Band*.....Berlin
6. Waltz—*Farewell to Munich*..............Gung'l
7. Intermezzo—*Gretchen*....................Martin
8. Medley Selection—*Stern's American-European Hits*....Williams
9. March—*Stop, Stop, Stop*.................Berlin

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Hotel Tivoli, Ancon, C. Z., January 14, 1912, at 7.30 p. m.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending January 10, 1912, (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
January 4	......	2.50	9.14	3.26	9.38
Jaauary 5	......	3.42	10.05	4.16	10.30
January 6	......	4.31	10.54	5.05	11.20
January 7	......	5.21	11.42	5.53	......
			P.M.		
January 8	12.09	6.10	12.30	6.41	......
January 9	12.59	7.01	1.20	7.31	......
January 10	1.50	7.52	2.12	8.23	......

The following ships arrived at or departed from the port of Balboa during the week ending December 30:

Arrivals—December 25, *Quilpue*, from Valparaiso; December 25, *Trinculo*, from Port Harford; December 26, *San Juan*, from San Francisco; December 26, *Urubamba*, from Callao; December 27, *Oberon*, from Port Harford; December 28, *Leelanaw*, from San Francisco; December 29, *City of Para*, from San Francisco.

Departures—December 27, *Trinculo*, to Port Harford; December 28, *Aysen*, to Valparaiso; December 29, *Oberon*, to Port Harford; December 31, *Urubamba*, to Callao.

Auction of Unclaimed Shipments.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., December 8, 1911.

In order to recover freight and storage charges, the Panama Railroad will dispose of the accumulation of Over and Unclaimed Shipments now in its possession, by public auction, commencing Wednesday, January 10, 1912, at 9.30 a. m.; sale to be held on Dock No. 11, Cristobal, C. Z.

The items to be sold consist of a miscellaneous assortment of wines, liquors, household goods, building material, stationery, groceries, dry goods, machinery, and merchandise in general, all of which has been held six months and over in an effort to locate owner.

J. A. SMITH, *General Superintendent.*

Sale of Public Building.

OFFICE OF THE CHIEF QUARTERMASTER,
CULEBRA, C. Z., December 22, 1911.

Sealed proposals will be received at this office until 3 p. m. Friday, January 5, 1912, and then opened for the purchase of building No. 13, located at San Pablo. Successful bidder will be required to remove building within thirty (30) days from date of sale, and will be granted the Commission freight rate over the Panama Railroad for material recovered from same. Proposals should be accompanied by certified check, post office money order, or cash for 5 per cent of amount bid. The Government reserves the right to reject any or all bids. Envelopes containing proposals should be endorsed "Proposal for Purchase of Building" and addressed to Colonel C. A. DEVOL, *Chief Quartermaster.*

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for the week of January 8 to 13, is as follows: Empire, Monday; Corozal, Tuesday; Culebra, Wednesday; Gorgona, Thursday; Cristobal, Friday; Gatun, Saturday.

EMPIRE.

Thirteen men entered the duck pin Isthmian tournament rolled at Cristobal on January 1.

The monthly handicap pool tournament which was played during the month of December was won by Mr. Hirsh, second place by Mr. J. King. Another tournament will be played during January.

The following is the standing of the chess tournament players.

Name.	Won.	Lost.
Pulsifer	15½	0
MacCoullough	9	4
Sherfey	13	8
Smith	3	3
Caldwell	5	3
Ross	4	7
Lippert	2	6
Warr	2	9
Newbold	2	4
Connor	0	4
Sine	0	6

Twenty names have been entered for the Spanish class which will meet every Tuesday night. A ladies' class will be formed if there are a number that care to take Spanish.

GATUN.

A Spanish class for the ladies of Gatun was organized December 29, with nine members. The two classes for men have an enrollment of 39.

The 10th Infantry Band gave a concert at the Gatun clubhouse on Thursday evening, December 28.

The Y. M. C. A. Choral club met on Tuesday, December 26. A sacred concert with the oratorio, "The Holy City," will be given during the early part of February.

An athletic meet will be held in the Gatun gymnasium on Saturday evening, January 6, between the Gorgona and the local athletes. This will be the first of a series of preliminary meets preparatory to the Inter-Association Meet to be held at Empire on February 22.

Dr. Weinstein of Monte Lirio addressed the Discussion Club on Sunday evening, December 31. His subject was "A Social Problem." Twenty-six men were present.

G. A. Barte has resigned from the management of the bowling alleys and is succeeded by Messrs. Durand and Wurster.

"Open House" was observed at the clubhouse on New Year's Day. All games were free until 6 p. m. Moving pictures were shown in the evening; G. K. Weston sang songs illustrated by colored slides.

CRISTOBAL.

Six hundred people enjoyed the concert of the Tenth Infantry Band from Camp Otis on Monday evening, December 25.

The sessions of the Literary and Debating Club will be resumed on Wednesday evening, January 10. At the session the installation of the officers-elect will take place. The subject for debate is :"Resolved, that the awakening of the yellow race is inimical to the economic and social welfare of the white race."

On Friday afternoon, January 5, there will be a session in Spanish to which all women who may desire to learn to speak Spanish are invited. Mr. Gomez will demonstrate his system. The session will begin at two o'clock. It is the purpose of the association to start a class for women providing a sufficient registration can be obtained. All details may be secured at the office. On January 9, there will be a sample session in Spanish for men at which Mr. Gomez will also demonstrate his work. All men, whether members of the association or not, are invited to attend the sample session, which meets at 8 p. m.

The local rag-time tournaments closed December 30, with the following teams in the lead: Ten Pins—Louch and Collins, 1,198; Duck pins—Barrett and Louch, 605; Candle Pins—Barrett and Bullard, 589.

The following high scores were made during the week ending December 30: Duck pins—Wheeler, 106; Claherty, 101, 101, 103; Jacques, 100; Smith, 107, 103, 102; Carty, D., 101; Herring, 101; Louch, 107, 107; Barrett, 102, 112; Weston, 109; Barte, 107; Bullard, 106, 106, 102, 104; Collins, 117; Gibson, 115; Herrington, 101, 101, 103; Farrell, A., 110; Orr, 118.

Candle pins—Collins, 108, 116, 103, 101; Grover, 107, 102, 108; Weston, 104, 105, 109, 103; Smith, 110; Claherty, 103; Marquez, 108; Louch, 103; Bullard 101, 110, 110, 100, 101, 101, 101, 119; Herring, 117, 104, 103; Barrett, 100, 103, 101, 108, 105.

Ten pins—Adams, 202; Louch, 201, 249; Barte, 211, 245; Collins, 219, 247, 215, 212, 210; Rabbitt, 204, 214; Gibson, 204, 204.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning January 1, 1912.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	*16
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24
MISCELLANEOUS.	
Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Veal, per pound	1.20
Beef, per pound	25
Eggs, fresh, dozen	42
one-half dozen only	22
Bluefish, fresh, per pound	14
Halibut, fresh, per pound	15
Oysters, 1 qt. kegs, per keg	50
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each 60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.00
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	28
Squabs, each	35
Capons, each	2.10
Grouse, each	50
CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30
DAIRY PRODUCTS.	
Butter—Creamery special, per pound	†45
Cheese—Roquefort, per pound	45
Philadelphia cream, cake	10
Young America, per pound	20
Swiss, per pound	26
Edam, each	1.00
Parmesan, lb.	§35
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**25
Buttermilk, bottle	**15
Ver-mil-lac, bottle	**25
Ice cream, quart	‡25
½-gallon	‡50
VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	10
Cabbage, per pound	4
Cucumbers, per pound	12
Carrots, per pound	4
Lettuce, per pound	17
Onions, per pound	3½
Potatoes, white, per pound	3½
sweet, per pound	2
Parsnips, per pound	4
Squash, per pound	3
Turnips, per pound	3
Yams, per pound	3
Apples, per pound	5
Cranberries, per pound	11
Grapes, per pound	10
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12
Pears, per pound	10

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery

§Sold only from cold storage and not from commissaries.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Comission, arrived at the ports of Cristobal, Colon, and Balboa during the two weeks ending December 30:

Tricolor, December 17, from Port Blakely, Washington, with 10,215 pieces yellow pine lumber, for stock.

Aztec, December 17, from San Francisco, with 10 cases lead, 42 cases salt water soap, 1,340 pieces pine lumber, for stock; 30 cases dredge sleeves, for Atlantic Division.

Magdalena, December 17, from New York, with 13 bundles tie rods and frogs, 8 bundles steel bands, for stock.

Altai, December 17, from New York, with 208 bundles steel bars, for Pacific Division; 91 bundles castings, for Mechanical Division; 30 cases paint, 91 bales cotton waste, for stock.

Cristobal, December 18, from New York, with 120,000 bags cement, for Atlantic and Pacific Divisions; 22 cases lock machinery, for Atlantic Division; 30 cases paper napkins, 8 crates stationery, 10 cases hardware, for stock.

Panama, December 20, from New York, with 178 kegs bolts, 79 cases bolts, for Atlantic Division; 224 kegs bolts, 47 cases bolts, for Pacific Division; 50 cases paint, for Mechanical Division; 19 cases window frames, for Panama Railroad Company; 366 pieces pine lumber, 10 bales rubber hose, 17 barrels pipe fittings, 9 crates ranges, 66 pieces steel bars, 13 bundles wicker baskets, 10 cases files, 60 pieces rail frogs, 22 cases valves, 17 barrels valves, 15 cases chloride lime, 14 cases scythe stones, 25 cases ink, 12 cases air brake material, 2,075 pigs iron, 1,040 bundles asbestos roofing, 52 cases enamel ware, 180 bales oakum, for stock; and a miscellaneous cargo, the whole consisting of 4,868 packages, weighing 315 tons.

Abangarez, December 21, from New Orleans, with 129 barrels fire brick, for Atlantic Division; 1,625 pieces yellow pine lumber, for Mechanical Division; 3,948 pieces yellow pine lumber, 98 pieces piling, 42 bundles handles, 480 drums oil, 400 cases grease, 380 drums kerosene, 9 cases castings, for stock.

Almirante, December 21, from New York, with 67 cases black paint, 33 bundles wheelbarrows, 125 cases toilet paper, 60 crates steel pipe, for stock.

Pleiades, December 22, from San Francisco, with 935 bales alfalfa hay, 750 cases dynamite, for stock.

Prinz Eitel Friedrich, December 25, from New York, with 10 cases electrical material, for stock.

Ida Cuneo, December 26, from Bridgeton, N. J., with 11,500 cases dynamite, for stock.

Allianca, December 27, from New York, with 6 cases electrical machinery, 10 bundles life boats and parts, for Atlantic Division; 190 cases water coolers, 1,771 pieces lumber, 13 cases emery cloth, 20 cases lamp chimneys, 10 cases ranges and parts, 288 pieces steel angles, 315 pieces steel channels, 56 kegs horse shoes, 34 crates enamel ware, 11 bales cotton mops, 11 cases sheet zinc, 44 kegs bolts, 10 cases wire screening, 75 bundles pipe, 25 crates buckets, for stock; and a miscellaneous cargo, the whole consisting of 3,006 packages, weighing 100 tons.

Atenas, December 28, from New Orleans, with 50 packages castings, for Atlantic Division; 190 bundles plates and brackets, for Pacific Division; 388 tons pig iron, for Mechanical Division; 927 pieces yellow pine lumber, 5,539 pieces yellow pine lumber, 148 pieces piling, 12 cases paint, 500 kegs white lead, 16 packages safety gates, 8 reels wire rope, 200 drums oil, 200 pails grease, for stock.

Carrillo, December 29, from New York, with 78 cases copper bars, for Atlantic Division; 22 cases copper bars, for Pacific Division; 10 cases gem clips, 10 cases gaskets, 10 cases packing, 20 bundles brooms and handles, 6,488 pieces yellow pine lumber, for stock.

Leelanaw, December 29, from San Francisco, with 1,123 bales hay, 750 cases dynamite, for stock.

City of Para, December 29, from San Francisco, with 9 drums carbon bisulphide, for stock.

Karen, December 29, from New Orleans, with 14,131 pieces creosoted ties, for Panama Railroad Company.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YDRK TO CRISTOBAL.

Advance	P. R. R.	Tuesday	Jan.	2
Panama	P. R. R.	Tuesday	Jan.	9
Allianca	P. R. R.	Monday	Jan.	15
Colon	P. R. R.	Monday	Jan.	22
Advance	P. R. R.	Saturday	Jan.	27
Panama	P. R. R.	Saturday	Feb.	3
Allianca	P. R. R.	Friday	Feb.	9
Colon	P. R. R.	Friday	Feb.	16
Advance	P. R. R.	Friday	Feb.	23
Panama	P. R. R.	Thursday	Feb.	29
Allianca	P. R. R.	Wednesday	Mar.	6
Colon	P. R. R.	Wednesday	Mar.	13
Advance	P. R. R.	Tuesday	Mar.	19
Panama	P. R. R.	Tuesday	Mar.	26

CRISTOBAL TO NEW YORK.

Colon	P. R. R.	Tuesday	Jan.	9
Advance	P. R. R.	Monday	Jan.	15
Panama	P. R. R.	Sunday	Jan.	21
Allianca	P. R. R.	Sunday	Jan.	28
Colon	P. R. R.	Saturday	Feb.	3
Advance	P. R. R.	Friday	Feb.	9
Panama	P. R. R.	Friday	Feb.	16
Allianca	P. R. R.	Thursday	Feb.	22
Colon	P. R. R.	Thursday	Feb.	29
Advance	P. R. R.	Wednesday	Mar.	6
Panama	P. R. R.	Wednesday	Mar.	13
Allianca	P. R. R.	Tuesday	Mar.	19
Colon	P. R. R.	Tuesday	Mar.	26
Advance	P. R. R.	Monday	Apr.	1
Panama	P. R. R.	Sunday	Apr.	7

NEW YORK TO COLON.

Prinz August Wilhelm	H.-A.	Saturday	Dec	30
Zacapa	U. F. C.	Thursday	Jan.	4
Sibiria	H.-A.	Friday	Jan.	5
Thames	R. M.	Saturday	Jan.	6
Almirante	U. F. C.	Thursday	Jan.	11
Prinz Eitel Friedrich	H.-A.	Saturday	Jan.	13
Santa Marta	U. F. C.	Thursday	Jan.	18
Prinz Sigismund	H.-A.	Friday	Jan.	19
Trent	R. M.	Saturday	Jan.	20
Metapan	U. F. C.	Thursday	Jan.	25
Prinz August Wilhilm	H.-A.	Saturday	Jan.	27
Zacapa	U. F. C.	Thursday	Feb.	1
Altai	H.-A.	Friday	Feb.	2
Oruba	R. M.	Saturday	Feb.	3

COLON TO NEW YORK.

Santa Marta	U. F. C.	Thursday	Jan.	4
Prinz Sigismund	H.-A.	Saturday	Jan.	6
Trent	R. M.	Tuesday	Jan.	9
Metapan	U. F. C.	Thursday	Jan.	11
Prinz August Wilhelm	H.-A.	Tuesday	Jan.	16
Zacapa	U. F. C.	Thursday	Jan.	18
Sibiria	H.-A.	Saturday	Jan.	20
Oruba	R. M.	Tuesday	Jan.	23
Almirante	U. F. C.	Thursday	Jan.	25
Prinz Eitel Friedrich	H.-A.	Tuesday	Jan.	30
Santa Marta	U. F. C.	Thursday	Feb.	1
Prinz Sigismund	H.-A.	Saturday	Feb.	3
Magdalena	R. M.	Tuesday	Feb.	6

NEW ORLEANS TO COLON.

Turrialba	U .F .C.	Saturday	Dec.	30
Cartago	U, F. C.	Wednesday	Jan.	3
Abangarez	U. F. C.	Saturday	Jan.	6
Heredia	U. F. C.	Wednesday	Jan.	10
Atenas	U. F. C.	Saturday	Jan.	13
Parismina	U. F. C.	Wednesday	Jan.	17

COLON TO NEW ORLEANS.

Atenas	U. F. C.	Thursday	Jan.	4
Parismina	U. F. C.	Thursday	Jan.	4
Turrialba	U. F. C.	Thursday	Jan.	11
Cartago	U. F. C.	Thursday	Jan.	11
Abangarez	U. F. C.	Thursday	Jan.	18
Heredia	U. F. C.	Thursday	Jan.	18

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages. The *Altai* cabins are all sold at second cabin rates.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a.m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JANUARY 10, 1912. No. 20.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

New Filtration Plant in Service.

Water from the new filtration plant at Agua Clara Reservoir, which supplies the villages of Gatun, New Gatun, and Spillway, was turned into the mains on December 29 and the carts, which had been delivering distilled water to the houses for drinking and domestic purposes, were dispensed with on January 5. Water for all purposes is now drawn directly from the taps. The Agua Clara filtration plant is the first of its kind on the Isthmus, being distinguished from those previously constructed principally in having the water pass through the filter beds by gravity, instead of under artificial pressure.

Canal Work in December.

The grand total of Canal excavation to January 1 was 158,092,940 cubic yards, leaving to be excavated 37,230,439 cubic yards, or about one-fifth of the entire amount for the completed Canal.

The total for December was 2,439,276 cubic yards, as compared with 2,946,404 cubic yards in December, 1910, and 2,811,681 cubic yards in December, 1909.

The dry excavation amounted to 1,542,593 cubic yards, and was principally by steam shovels. The dredges removed 894,346 cubic yards, and 2,337 cubic yards were sluiced in the Central Division, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 665,585 cubic yards. Of this total, 50,199 cubic yards were dry excavation, and the remainder was removed by dredges in the Atlantic entrance.

The total excavation in the Central Division was 1,361,981 cubic yards, all of which was from the prism. The amount taken from Culebra Cut was 1,351,082 cubic yards, as compared with 1,211,400 cubic yards in December, 1910.

In the Pacific Division, the total excavation was 411,800 cubic yards, 278,960 cubic yards of which were taken out by dredging at the Pacific entrance.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Locks, Dam and Spillway..................	....	....	....
Mindi..................	50,199	....	50,199
Total..................	50,199	....	50,199
Wet excavation—			
Atlantic entrance	533,409	81,977	615,386
Locks, Dam and Spillway..................	....	....	....
Total..................	533,409	81,977	615,386
Total wet and dry excavation.........	583,608	81,977	665,585

CENTRAL DIVISION.

Dry excavation—			
Culebra Cut............	1,351,082	....	1,351,082
Chagres section.......	8,472	....	8,472
Wet excavation—			
Chagres section........	2,337	....	2,337
Total	1,361,891	....	1,361,891

PACIFIC DIVISION.

Dry excavation—			
Locks, Dams and Spillways..................	96,800	....	96,800
Diversions.............	36,040	....	36,040
Prism, south of Pedro Miguel Locks........	....	....	....
Total..................	132,840	....	132,840
Wet excavation—			
Pacific entrance	278,960	....	278,960
Miraflores Locks......	....	....	....
Inner Harbor.........	....	....	....
Total..................	278,960	....	278,960
Total wet and dry excavation.........	411,800	....	411,800

TOTAL CANAL EXCAVATION.

Dry excavation	1,542,593	....	1,542,593
Wet excavation	814,706	81,977	896,683
Total..................	2,357,299	81,977	2,439,276

Mean rainfall along Canal (eleven stations), 1.19 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc.; that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks.	43,590	63,132	106,722
Concrete laid in dams and spillways.......	3,543	....	3,543
Fill placed in dams...	322,815	31,080	353,895

Lower Approach Floors at Pedro Miguel.

Drainage from the portion of Culebra Cut south of the summit, near Empire, passes through a ditch in the upper approach to the east chamber at Pedro Miguel Lock and flows through a culvert in the center wall to a point below the site of the lower guard gates, where the culvert debouches into the lower approach chambers, on both sides of the approach wall. For the purpose of laying the floor in the west approach, the apertures on that side were stopped with timber gates and the water was passed through a diked channel at the east base of the approach wall, passing into the Rio Grande below the locks. That floor having been finished, the water has been turned into the west chamber in order that the flooring for the east chamber may be completed. To prevent backflooding above the aperture a dike of sacks of cement has been thrown across the chamber on the sill for the lower guard gates. A locomotive crane, equipped with grab-bucket, has been engaged in making a channel for the flow of the water into its former path to the Rio Grande. Steamshovel No. 50 is engaged in removing the levee of earth and sheeting by which the water was formerly conducted down the east side. A steam pump is drawing the backflow and rain water from the lower east chamber, and the electrically operated pump, which has been in use for that purpose, will be removed.

New Main from Rio Grande Reservoir.

Pipe is being distributed for the laying of the new 20-inch water main from the Rio Grande Reservoir to Panama, to replace the present 16-inch pipe line. The contract for materials calls for 49,000 linear feet of 20-inch pipe, with accessory tees, bends and reducers. The new line will follow the location of the present main as far as Pedro Miguel Lock, where it will cross the Canal by being set in the concrete of the piers and sills for the emergency dams, at the upper end of the lock proper. From Pedro Miguel to Panama it will follow the line of the Panama railroad. Along the portion of the track bordering on Miraflores Lake it will be laid well above the normal surface of the lake. The new main will have an increased capacity of, theoretically, 56 per cent above the old one. It is probable that the capacity of the Rio Grande Reservoir will, later on, be increased by building higher the retaining dam.

Removal of Dike at Mindi.

A natural dike of rock separates the water in the Canal channel between the Atlantic Ocean and Mindi from the excavation made by steamshovels and dredges between Mindi and Gatun Locks. It is planned to remove this dike by blasting, allowing the water to submerge the channel, and to complete the excavation with dredges. It is about 700 feet long, crossing the 500-foot channel at an angle. The top is about 40 feet wide and the sides slope approximately 2 on 3. Excavation is to be made to 41 feet below sealevel.

The dike will be perforated from the inland side with horizontal rows of 100 drill holes.

NOTES OF PROGRESS.

(Continued.)

at such intervals as the nature of the material warrants and the rows will be set off in succession from the bottom of the dike, all of the charges in each row being exploded simultaneously. After a row has been discharged and any resulting large bowlders have been reduced by "dobie" blasts, water will be siphoned over the top of the dike to fill the channel beyond to the level above that of the discharged row of holes. Then the next row will be set off and the siphoning will be continued; and so on until the final blast will remove the last barrier between the two sections of channel, the waters of which will by that time have reached nearly the same level. The procedure of letting the water in gradually is designed to prevent a rush which might injure the dredges. After the dike has been broken up, ladder and dipper dredges will remove the submerged fragments of rock.

Until the time for removing the dike the two steamshovels at Mindi will furnish spoil to fill a trestle east of the main line of the Panama railroad and forming, with the railroad embankment and hills at the ends, a lagoon, about 1,000 by 4,000 feet, into which will be piped spoil from the suction dredges at work in the Atlantic entrance channel. The surface of the lagoon will be raised about fifteen feet from its present elevation at 7 feet above sealevel.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 74 per cent completed, 167,436 cubic yards, out of a total of 225,000, having been placed at the close of work on January 6. A statement of the amount laid each working day last week, and of the total in place, follows;

Date.	Concrete Laid.	Hours worked	No. Mixers.
January 1. (Holiday)	....	....	....
January 2	88	8.00	2
January 3	112	5.00	1
January 4	180	7.00	1
January 5	163	7.00	1
January 6	180	6.00	1
Total	723	33.00	1.2
Previously reported	166,713		
Grand total	167,436		

Porto Bello Crusher.

Date.	Hours worked.	Cubic Yards.
January 1 (Holiday)	....	....
January 2	3.10	1,572
January 3	3.45	1,808
January 4	4.12	2,050
January 5	2.57	1,650
January 6	3.51	1,748
Total	17.55	8,828

Ancon Crusher.

Date.	Hours worked.	Cubic Yards.
January 1. (Holiday)	....	....
January 2	7.25	2,479
January 3	7.55	3,077
January 4	8.20	2,916
January 5	6.00	2,806
January 6	6.45	2,478
Total	36.25	13,756

Removal of Mixing Plant at Pedro Miguel.

The 2-cubic yard concrete mixer, at the south end of the east side wall of Pedro Miguel Lock, which was part of the permanent mixing plant, has been torn down and hauled to Gorgona shops for general overhauling and repairs. When these are made it will be taken to Miraflores Locks and mounted on the berm crane on the east side which has so far been equipped with only one mixer, likewise of 2-cubic yard capacity. At Pedro Miguel, the mixer supplied the chamber crane in the east chamber and filled buckets which were hauled by narrow gage railway to different parts of the locks. It supplied some of the concrete for the southeast wing wall but the remainder is to be furnished from ½-cubic yard portable mixers.

CONCRETE WORK IN THE LOCKS.

Over 75 per cent of the concrete for the locks is in place, the amount at the close of work on January 6, being 3,170,816 cubic yards, out of a total of approximately 4,199,400. A total of 20,950½ cubic yards of concrete was laid in the locks during the week ending January 6.

GATUN LOCKS.

Over 88 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on January 6, being 1,773,462 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending January 6, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
January 1. (Holiday)	....	....	......	....	....	......	....	....
January 2	1,740	29.00	5	488	5.40	2	28	2,308½
January 3	1,062	18.23	5	284	3.40	2	....	1,365
January 4	636	10.42	2	366	4.40	2	....	1,018½
January 5	1,096	18.44	4	174	2.40	2	....	1,341½
January 6	1,652	29.48	4	222	3.40	2	....	1,946
*Portable mixers	....	....	......	231½	....	......	....	....
Total	6,186	106.37	4	1,765½	20.20	2	28	7,979½
Previously reported	....	....	......	....	....	......	....	1,765,482½
Grand total	....	....	......	....	....	......	28	1,773,462

*The 231½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days: January 2nd, 52½; January 3rd, 19; January 4th, 16½; January 5th, 71½; January 6th, 72.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 94 per cent completed, 793,317 cubic yards, out of a total of 837,400 bucket measurement, having been placed at the close of work on January 6. The record for each of the six 8-hour working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
January 1	....	....	......	....	....	......	....	....
January 2	408	12.50	2	200	18.50	3	....	608
January 3	246	7.50	2	194	16.75	3	....	440
January 4	412	12.50	2	297	24.25	3	....	709
January 5	316	9.50	2	233	19.25	3	....	549
January 6	298	9.00	2	176	14.00	3	....	474
Total	1,680	51.00	2	1,100	92.75	3	....	2,780
Previously reported	....	....	......	....	....	......	4,423	790,537
Grand total	....	....	......	....	....	......	4,423	793,317

MIRAFLORES LOCKS.

Over 44 per cent of the concrete for the system of two twin locks at Miraflores was in place on January 6, the total amount on that date being 604,307 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.	*Cu. Yds.*					*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Jan. 1	....	....	......	....	....	......	....	....	......	....	....
Jan. 2	1,458	28.67	7	320	4.90	2	232	16.00	2	....	2,010
Jan. 3	1,632	48.50	7	338	5.42	2	301	20.50	3	....	2,271
Jan. 4	1,362	39.83	7	484	7.37	2	303	19.50	3	....	2,149
Jan. 5	1,108	31.75	6	350	5.47	2	236	17.50	3	....	1,694
Jan. 6	1,322	23.00	7	486	7.75	2	259	19.50	3	....	2,067
Total	6,882	171.75	6.8	1,978	30.91	2	1,331	93.00	2.8	....	10,191
Previously reported	....	....	......	....	....	......	....	....	......	3,693	594,116
Grand total	....	....	......	....	....	......	....	....	......	3,693	604,307

STEAMSHOVEL RECORDS.

Work of Central Division and Panama Railroad Relocation Steamshovels.

During the month of December the total amount of material excavated in the Central Division was 1,361,891 cubic yards, of which 164,252 cubic yards were classified as earth. and 1,197,639 cubic yards as rock. Of this quantity 1,351,082 cubic yards were removed by steamshovels, contractors removed 2,337 cubic yards by sluicing and 8,472 cubic yards by hand.

The high record for the month was made by shovel No. 219, working 25 days in the Culebra District, which excavated 46,322 cubic yards of rock. The second best record for the month was made by shovel No. 207, working 25 days in the Culebra District, which excavated 45,223 cubic yards of rock. The best record for a shovel of the seventy-ton class was made by shovel No. 126, working 25 days in the Culebra District, which excavated 33,040 cubic yards of earth.

Shovel No. 212, working in the Culebra District, made a high record for one day by excavating 3,204 cubic yards of rock on December 4.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month and for one day are shown below:

BEST RECORDS FOR THE MONTH.

EMPIRE DISTRICT.

Shovel No.	Cubic Yards.			
	Earth.	Rock.	Total.	No. of days at work.
211	....	40,656	40,656	25
253	....	38,325	38,325	25
215	18,543	19,767	38,310	25
		CULEBRA DISTRICT.		
219	....	46,322	46,322	25
207	....	45,223	45,223	25
217	....	44,589	44,589	25
		PEDRO MIGUEL.		
122	8,000	6,718	14,718	21
231	5,000	14,084	19,084	12½

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
211	Empire	Dec. 6	Rock	2,473
253	Empire	Dec. 8	Rock	2,432
228	Empire	Dec. 22	Rock	2,297
212	Culebra	Dec. 4	Rock	3,204
204	Culebra	Dec. 16	Rock	3,156
203	Culebra	Dec. 27	Rock	3,135
231	Pedro Miguel	Dec. 20	Rock	1,900

Relocated Line of Panama Railroad.

The total steamshovel excavation on the relocated line of the Panama railroad amounted to 345,520 cubic yards.

The best month's record was made by steamshovel No. 257, working on the Gatun section, which excavated 58,380 cubic yards of solid rock.

In the 70-ton class, the best month's record was made by steamshovel No. 123, working near Empire, which excavated 19,260 cubic yards of earth and 12,500 cubic yards of solid rock, a total of 31,760 cubic yards.

The best day's record for shovels with a 5-yard dipper was made by steamshovel No. 262, which excavated 3,400 cubic yards of rock on December 2.

The best day's record for shovels with a 3-yard dipper was made by steamshovel No. 117, which excavated 2,100 cubic yards of rock on December 11.

Month's records are place measurement, and day's records are car measurement.

All material was loaded in 10-yard Western dump cars.

BEST RECORDS FOR THE MONTH.

Shovel No.	Location.	Cubic Yards by Cross Section.			
		Days worked.	Earth.	Rock.	Total.
257	Gatun	25	....	58,380	58,380
262	M'nte Lirio	25	....	54,180	54,180
123	Empire	25	19,260	12,500	31,760
121	Paraiso	25	29,355	....	29,355
117	Gatun	25	18,800	8,060	26,860

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
262	Monte Lirio	Dec. 2	Rock	3,400
257	Gatun	Dec. 9	Rock	3,230
263	Paraiso	Dec. 27	Earth and rock	2,260
266	Paraiso	Dec. 16	Earth and rock	2,100
117	Gatun	Dec. 11	Rock	2,100
110	Empire	Dec. 22	Earth	1,940

Total steamshovel output during the month of December, 345,520 cubic yards.

Total number of steamshovel working days, 260.

Average output per working day, 1,329 cubic yards.

Debts of Employes.

In reply to a request from the Colon Board of Commerce that the Commission take steps to have a bankruptcy or garnishee law passed for the Canal Zone to compel Canal employes to pay their debts, the Chairman has informed the Board that it is not considered practicable to take any action along this line at the present time. He informed the Board, however, that the following circular issued on December 28, 1904 is still in effect:

> Failure to meet commericial obligations is regarded as inconsistent with the qualities desired in employes of the Commission, and as impairing their efficiency. The Chief Engineer will therefore consider refusal to pay just debts, contracted on the strength of the employe's status as such, as sufficient cause for dismissal.

The present policy, in addition to that of the circular, is stated as follows:

> When an employe denies the alleged obligation, or the amount of the obligation is in dispute, I can take no action unless the creditor brings suit and obtains judgment for a definite amount. I must also refuse to assist in the collection of bills for liquors sold at retail, as the Commission does not wish saloon keepers to extend credit to its employes, and will not recognize or encourage the practice.

December Rainfall for Three Years.

Stations.	1909	1910	1911	Station Average	Years of Record	Rai'y days 1911
Pacific Section-						
Ancon	12.39	10.63	1.99	4.24	15	7
Balboa	12.12	9.79	1.36	6.05	13	7
Miraflores	14.53	8.71	1.40	8.51	4	6
Pedro Miguel	11.30	9.61	1.82	8.25	4	3
Rio Grande	10.56	10.90	1.27	6.20	7	6
Central Section-						
Culebra	10.58	11.86	.31	7.81	21	6
Camacho	10.54	11.65	1.34	7.17	6	5
Empire	9.44	9.06	.20	5.81	8	5
Gamboa	12.33	13.11	.97	7.09	29	10
Alhajuela	22.90	15.49	.39	7.45	13	5
El Vigia	10.90*	16.01	.45	7.76	4	5
Gorgona	12.82	15.71	1.01	7.35	7	7
San Pablo	12.10	19.65	.63	8.03	5	13
Tabernilla	13.59	17.72	.53	7.98	5	10
Bohio	20.53	21.30	1.34	10.67	17	15
Trinidad	18.49	21.64	3.09	12.61	4	16
Monte Lirio	24.08	23.96	2.30	12.26	5	28
Atlantic Sec.–						
Gatun	31.66	19.24	2.25	13.89	7	16
Brazos Brook	36.45	20.15	1.86	14.95	6	19
Colon	34.38	15.20	2.63	12.33	41	16
Porto Bello	58.17	22.89	2.16	24.49	5	16

*Raingage washed away; 5 days record lost.

Lost—Gold mesh bracelet, in Cristobal or Colon on Tuesday, January 2. Liberal reward for return to Colon Hospital office.

CANAL ZONE CENSUS.

Scope of the Work and Questions to be Asked.

Arrangements have been completed for the second census of the Canal Zone, which will be begun on February 1, and will be finished as rapidly as possible. It is believed that the compilation of the results will take about two months. The work is in charge of the Department of Civil Administration, and under the direction of Edward W. Koch, of the Bureau of the Census at Washington, and C. L. Luedtke, assistant chief clerk of the Department of Civil Administration. The census will include an enumeration of all residents of the Canal Zone, and employes of the Isthmian Canal Commission and Panama Railroad Company residing in Colon, Panama, Porto Bello, and at other points outside the Canal Zone on the Isthmus or in Isthmian waters. The questions to be asked follow:

1. Name of person.
2. Metal check number.
3. Sex.
4. Color.
5. Age at last birthday.
6. Whether single or married.
7. Whether deaf and dumb, blind, insane, or imbecile.
8. Place of birth.
9. Country of which citizen or subject.
10. Date of first arrival in the Canal Zone.
11. Date of arrival at present location.
12. If location has been changed since February 1, 1912, state former location.
13. Whether able to read.
14. Whether able to write.
15. Whether able to speak English or if not give language spoken.
16. Occupation.
17. Where and by whom employed.

For purposes of enumeration the Canal Zone will be divided into four districts comprising the territories of the old administrative districts of Ancon, Empire, Gorgona, and Cristobal. The work in each of these districts will be under the direction of a supervisor. Each district will in turn be divided into enumeration sections comprising towns, villages, localities, labor camps, etc., for the more densely populated areas; and two sections in each district for the rural population. After a building is enumerated a label will be pasted upon it so that a check can be made, and a further check will be made by the Quartermaster's lists of buildings and the property lists.

The first census of the Canal Zone was taken from March 3 to June 23, 1908, and showed the population to be 50,003 of whom 24,296 were employed on the Canal or railroad work. This did not include the employes living in Panama and Colon. The whites numbered 14,635, the blacks 34,785, and the yellow 583.

Reduction of Force at Gatun.

As the construction of Gatun Locks, over 88 per cent of the concrete for which is in place, nears completion some of the employes are being notified that their services will soon no longer be required. Six gold employes, foremen and general foremen, have been informed in writing that their work at Gatun will be finished by the first of March, and the suggestion is made that they try to arrange for transfer to other parts of the construction. The silver roll has also been reduced and further reductions on both gold and silver rolls will be made about the first of March.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M'THS.	CULEBRA SECTION.*								CHAGRES SECTION.**				
	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1907.	1908.	1909.	1910.	1911.
Jan.	....	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	....	169,447	389,399	175,802	255,385
Feb	....	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	....	200,145	450,182	286,309	219,550
March	....	132,840	239,178	815,270	1,290,385	1,434,597	1,509,728	1,728,748	....	324,233	619,491	484,846	297,339
April	....	126,749	213,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	....	329,483	510,020	428,777	102,103
May	27,556	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	....	235,902	386,170	248,974	29,783
June	32,551	76,905	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	....	322,145	275,900	164,389	32,288
July	31,599	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	....	345,757	233,897	166,106	22,284
August	35,056	49,210	244,823	786,866	1,171,927	1,173,370	1,377,714	1,442,402	2,900	368,683	231,543	234,404	21,892
Sept	25,220	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	1,340,173	21,546	346,948	235,818	234,290	21,272
Oct	19,695	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	1,306,971	25,627	424,911	221,409	271,409	12,216
Nov	28,860	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	44,044	336,390	93,619	260,882	12,248
Dec.	42,935	70,630	307,689	1,025,485	1,210,046	1,152,022	1,211,400	1,351,082	98,652	383,948	105,044	197,481	10,809
Totals	243,472	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	16,596,891	192,769	3,787,992	3,752,492	3,153,669	1,037,169

MONTHS.	ATLANTIC DIVISION.						PACIFIC DIVISION.¶							
	COLON (MINDI)†		GATUN LOCKS, DAM AND SPILLWAY.††				PEDRO MIGUEL LOCKS.‡				MIRAFLORES LOCKS, DAMS AND SPILLWAY.‡‡			
	1909.	1911.	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1911.	1908.	1909.	1910.	1911.
January	45,664	....	292,155	102,690	125,011	65,889	....	83,726	27,320	15,690	7,203	61,202	31,479	48,744
February	46,046	47,102	282,797	95,031	123,738	50,511	....	58,242	9,486	6,809	39,046	53,689	15,300	12,936
March	70,713	49,734	374,598	90,051	132,007	51,431	....	95,624	6,784	674	73,194	51,417	18,184	72,739
April	74,368	74,030	373,456	70,009	103,243	12,548	....	101,365	9,129	255	98,943	60,060	12,148	79,751
May	71,407	64,482	266,747	52,786	82,958	17,677	....	57,523	10,405	5,905	73,023	47,588	20,250	57,975
June	80,101	59,157	244,951	36,556	88,088	4,840	13,228	70,971	8,420	7,454	68,691	55,653	21,994	38,023
July	82,378	58,125	213,359	39,058	95,503	6,897	22,648	77,503	4,410	6,273	104,369	50,999	11,990	97,884
August	66,249	65,041	188,262	40,346	99,737	22,558	22,217	58,025	12,789	220	94,248	35,446	17,548	102,249
Sept'mber	61,437	74,457	145,990	49,945	103,040	3,489	28,833	48,825	10,405	3,472	90,923	31,803	8,590	96,112
October	72,643	65,919	154,064	57,321	118,327	112	48,875	39,002	7,433	5,365	74,700	25,349	9,850	107,790
November	42,009	54,719	118,278	63,452	94,552	....	55,401	20,207	10,636	12,962	52,930	18,644	9,400	84,894
December	....	50,199	119,904	96,590	72,030	....	65,578	28,342	11,195	17,320	69,650	20,083	17,906	79,480
Totals	713,015	662,995	2,774,561	793,835	1,238,234	235,952	256,780	739,355	128,412	82,399	846,920	511,933	194,639	878,577

*Total to January 1, 1912, 73,502,824 cubic yards.

**Total to January 1, 1912, 11,924,091 cubic yards, of which 187,248 cubic yards were removed by sluicing.

†Total to January 1, 1912, 2,139,816 cubic yards; in this total are included 172,851 cubic yards removed in 1907, and 590,955 cubic yards removed in 1908.

††Total to January 1, 1912, 6,409,389 cubic yards; in this total are included 26,628 cubic yards excavated October to December, 1906, and 1,340,179 cubic yards in 1907.

‡Total to January 1, 1912, 1,206 946 cubic yards.

‡‡Total to January 1, 1912, 2,432,069 cubic yards.

¶There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 651,139 cubic yards at different points in prism to Jan. 1, 1912. There were also 172 cubic yards removed by steam shovels outside of prism during October, 1908.

WET EXCAVATION.

MONTHS.	ATLANTIC DIVISION.							PACIFIC DIVISION.								
	ATLANTIC ENTRANCE.§					GATUN LOCKS †		PACIFIC ENTRANCE.§§							Miraflores Locks.§§§	
	1907.	1908.	1909.	1910.	1911.	1908.	1909.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1910.	1911.
Jan.	111,100	490,701	521,050	510,055	520,181	.....	97,043	....	95,940	94,710	460,250	469,529	518,936	379,810	....	89,243
Feb	110,002	427,722	444,910	493,448	455,318	......	132,291	....	95,940	93,480	663,519	671,477	285,791	386,866	....	87,335
Mar.	84,145	546,886	461,208	412,325	391,736	......	141,838	....	116,820	92,319	783,281	865,696	462,588	639,761	....	....
April	69,889	496,366	470,635	190,574	492,579	.....	17,938	....	110,700	104,855	676,539	731,767	534,322	439,622	....	....
May	133,847	564,386	315,370	447,578	514,178	.....	52,011	....	112,340	122,157	530,466	720,753	484,509	548,047	....	....
June	124,118	572,749	182,575	458,021	452,098	......	38,829	50,676	62,697	133,575	656,621	844,685	475,486	576,100	....	....
July	109,922	625,497	348,451	423,092	425,195	......	....	41,533	98,400	108,338	696,170	733,181	515,782	520,692	....	....
Aug.	194,297	638,217	422,846	508,829	367,456	..	....	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....	....
Sept.	403,842	624,776	410,574	451,873	420,434	......	....	114,308	105,780	153,975	750,080	662,976	473,585	534,667	......	....
Oct.	415,120	505,260	314,778	549,788	470,400	......	....	81,836	97,170	357,122	762,276	720,920	467,873	339,815	40,000	....
Nov.	422,797	570,832	457,889	600,708	742,242	.....	....	71,176	92,988	365,423	609,089	627,791	425,870	462,283	47,444	....
Dec.	442,835	679,604	489,121	482,370	533,409	8,583	....	71,094	90,528	349,551	729,960	727,460	387,034	278,960	68,681	....
Tot'ls	2,621,914	6,742,996	4,839,407	5,528,661	5,785,226	8,583	479,950	485,153	1,191,233	2,143,789	8,056,025	8,399,498	5,538,745	5,736,864	156,125	176,578

§Total to Jan. 1, 1912, 26,945,669 cu. yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906.

§§Total to January 1, 1912, 31,551.307 cubic yards. Of this amount, 648,507 yards were removed by monitors.

§§§Total to January 1, 1912, 642,350 cubic yards; in this total are included 309,647 cubic yards excavated in 1909.

†Total to January 1, 1912, 488,533 cubic yards. There were also 38,425 cubic yards removed by dredges at Gatun Dam site in 1907.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.			PEDRO MIGUEL LOCKS.			MIRAFLORES LOCKS.		
	1909.	1910.	1911.	1909.	1910.	1911.	1909.	1910.	1911.
Jan	......	54,136	72,919	....	16,273	38,513	......	....	24,018
Feb	......	55,696	72,103	....	13,218	37,011	......	146	20,896
March	....	60,998	86,884	....	18,793	44,716	......	314	31,173
April	....	63,227	67,361	....	24,522	28,635	......	13	38,758
May	....	74,273	67,844	....	29,576	19,135	......	27	36,154
June	....	89,401	55,305	....	30,631	18,243	......	1,603	26,536
July	....	84,001	71,046	....	41,464	19,906	28	3,672	32,840
Aug	1,298	85,686	66,928	....	51,264	20,736	74	6,030	57,003
Sept	12,294	76,720	57,298	2,370	50,702	15,379	......	18,133	56,083
Oct	29,378	86,949	53,636	8,310	61,422	25,637	......	22,159	60,873
Nov	30,270	75,152	43,907	10,169	64,248	19,622	......	23,871	41,726
Dec	42,832	80,212	43,590	13,007	42,834	14,360	......	21,533	48,772
Total	116,072	886,451	758,821	33,856	444,947	301,893	102	97,501	474,832

From March 17, 1909, to January 1, 1912, there were placed in the Spillway of Gatun Dam 168,100 cubic yards of concrete, including 3,543 cubic yards placed in Dec., 1911; in Miraflores Dam, there were placed 321 cubic yards up to January 1, 1912

FILL PLACED IN DAMS.

M'THS.	GATUN.*				PEDRO MIGUEL.†		MIRAFLORES.‡			
	1910.		1911.		1910.	1911.	1910.		1911.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan.	178,254	236,994	211,992	218,690	......	.....	....	28,151	89,243	24,685
Feb.	292,215	271,788	301,733	211,008	11,510	......	....	1,438	87,335	32,404
Mar.	210,387	332,661	342,809	255,047	22,860	.....	......	5,385	25,131	23,940
April	242,440	263,437	368,658	205,130	31,394	......	....	....	14,100	67,260
May.	249,283	194,868	419,348	207,751	23,572	......	....	6,480	18,353	30,032
June.	384,166	258,653	432,008	227,996	1,350	......	....	7,356	53,858	28,315
July.	462,092	180,111	324,947	201,996	......	14,865	....	4,290	24,957	54,415
Aug.	406,606	229,774	259,389	232,426	......	24,812	....	10,898	25,000	72,203
Sept.	457,637	223,102	261,838	194,497	......	4,052	....	11,220	6,409	34,480
Oct.	480,732	259,619	214,320	218,305	......	3,400	40,000	14,370	7,130	37,250
Nov.	129,666	266,105	266,603	207,157	......	3,190	47,444	8,960	14,370	31,800
Dec.	243,121	169,575	89,752	233,063	......	7,350	68,681	39,224	....	23,730
T'tal	3,736,599	2,886,687	3,493,388	2,613 066	90,686	57,669	156,125	137,772	366,336	460,514

*Dry fill begun in January, 1907, and 2,096,477 cubic yards of wet, and 3,241,418 cubic yards of dry fill were placed in 1907, 1908 and 1909.

†170,166 cubic yards placed in dams up to December, 1909, inclusive.

‡138,587 cubic yards of wet fill and 472,091 cubic yards of dry fill were placed in dams up to December, 1909.

CANAL EXCAVATION TO DATE.

By French Companies		78,146,960
French excavation useful to present Canal		29,908,000
By Americans—		
Dry excavation	98,157,431	
Dredges	59,853,532	
Total		158,010,963
May 4 to December 31, 1904	243,472	
January 1 to December 31, 1905	1,799,227	
January 1 to December 31, 1906	4,948,497	
January 1 to December 31, 1907	15,765,290	
January 1 to December 31, 1908	37,116,735	
January 1 to December 31, 1909	35,096,166	
January 1 to December 31, 1910	31,437,677	
January 1 to January 1, 1912	31,603,899	

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation	8,549,205	36,021,832	*49,058	11,205,990
Dredges	27,472,627		11,255,048	
Central—				
Culebra Cut	73,502,824	85,426,915	14,941,181	16,374,381
All other points	11,924,091		433,260	
Pacific—				
Dry excavation	4,368,559	36,562,216	2,563,521	9,732,045
Dredges	32,193,657		7,168,524	
Grand totals		158,010,963		37,312,416

*Estimate exceeded by this amount.

ERECTING LOCK MACHINERY.

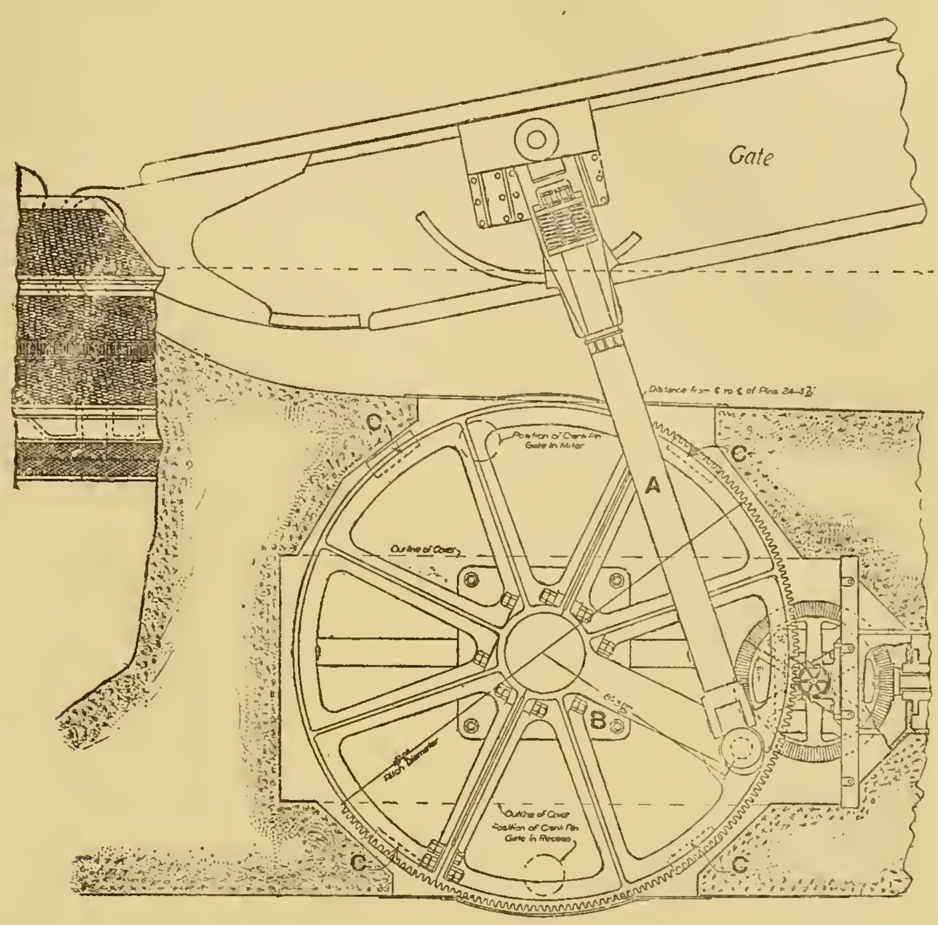
Construction of Device for Operating Miter Gates.

The first of the machines for operating the miter gates in the locks has been received and the work of erecting it at upper guard gate No. 38, in the middle wall of the east upper lock at Gatun, is advancing. A description of the mechanism for opening and closing the lock gates was published in The Canal Record of April 20, 1911.

The part that is being erected now is the crank gear or large wheel shown in the illustration (*A*) herewith, and the machinery by which motion is transmitted from the motor to the wheel. The wheel and machinery are made by the Wheeling Mold and Foundry Company, the William Todd Company sub-contractors for the machine work; but the motors are purchased under a separate contract, to be made with the manufacturer that supplies the best motors, as determined by the tests now in progress at Gatun.

In operating, the wheel turns through an arc of 197 degrees, giving to the strut or connecting rod the movement of an arm in opening or closing a door, and the gate is opened or closed by this pull or thrust. The wheel is mounted upon a center plate, embedded in the lock wall and anchored into it by twelve bolts, 11 feet long and 2¼ inches in diameter. This plate is of cast steel 6½ feet square and weighs 13,200 pounds. It must be placed with great nicety because upon it depends the relation of the wheel to the gate, and the joining of the two by the connecting rod or strut.

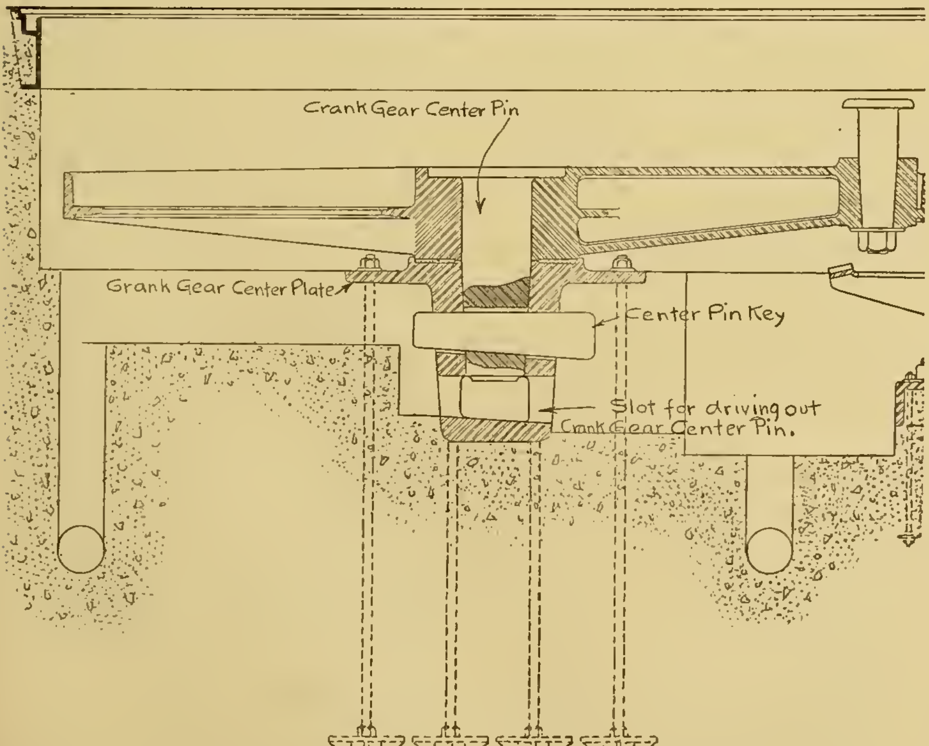
The wheel itself is 19 feet 2 inches in diameter and is constructed of cast steel in two sections. The section containing the pin to hold the strut is heavier than the other, the weights being respectively 19,500 and 15,800 pounds. The wheel bears upon the center plate and upon four bearing wheels mounted in the wall and supporting the bull wheel at its rim, as indicated (c) in the drawing (*A*) herewith. It is then fixed to the plate by a steel forged center pin, 4 feet 8 inches long, 18 inches in diameter, and weighing 4,090 pounds. This pin contains a slot near the bottom which, when the pin is in place, is opposite similar slots in the center plate. A steel pin key is driven through the slots, thus holding the center pin firmly in place in the bed plate. Below the key slots in the center plate is a similar slot into which the bottom of the center pin projects slightly. The pin key driven through this slot will loosen the center pin enough so that it may be removed without special effort. This key itself is 4 feet long, and one foot at greatest width.


Gate
Distance from ℄ to ℄ of Pins
Position of Crank Pin Gate in Miter
A
Outline of Cover
Pitch Diameter
B
Outline of Cover
Position of Crank Pin Gate in Recess
C
C
C
C

(*A*.) LOCK GATE OPERATING MACHINE SHOWING RELATION OF BULL WHEEL TO STRUT AND GATE. (A) STRUT OR CONNECTING ROD. (B) BED PLATE. (C) BEARING WHEEL.

A cross-section of the bull wheel and its setting is shown in sketch (*B*) herewith.

All the parts for the gate moving machine are being handled into place by locomotive crane. One of these machines will be required for each gate leaf or 92 in all.



(*B*.) SECTION THROUGH CENTER OF BULL WHEEL, SHOWING METHOD OF ANCHORING BED PLATE SETTING WHEEL.

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of December, 1911, follows:

Destination.	Number Cars.	Cubic Yards.
Pacific Division	2,105	39,269
Central Division	30	450
Atlantic Division	55	1,161
Mechanical Division	6	150
Quartermaster's Department	2	50
Panama railroad	1	25
Miscellaneous	4	98
New concrete dock	61	915
Total	2,264	42,118

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

Preparations for the annual meeting of the Canal Zone Federation of Women's Clubs are about completed. The meeting will take place at Cristobal on January 27. It is expected that the speakers for the afternoon will be Mrs. Ruth Litt, Chairman for the committee on Drama for the New York State Federation, and Mr. Frank A. Gause, Superintendent of the Canal Zone schools. Through the courtesy of the Panama Railroad Company, transportation has been granted to all club women on a special coach to be attached to the rear of the train leaving Panama at 6.30 a. m. The business meeting will be called at 9.30 a. m. Invitations have been sent to the 13 organizations of women in the Canal Zone for the afternoon meeting, and a limited number of passes will be extended to such members of these organizations as are desirous of attending the meeting. These guests of the Federation will arrive at Cristobal at midday, and the afternoon meeting will convene at 2.30 o clock. Presidents of the clubs, the custodian and librarian, and the chairmen of committees are requested to have their reports in writing to present at the business meeting. There will be an election of officers for the coming year.

The Empire Woman's Club held a business meeting on Thursday, January 4. Three new members were admitted to the club. The next meeting will be held on January 18 at Las Cascadas.

There will be a meeting of the Gatun Woman's Club at Gatun on Thursday, January 11, when the quarterly election of officers will be held.

At the semi-annual election of officers in the Paraiso Club on Wednesday, January 3, it was unanimously voted to return the following officers for the remainder of the year: President, Mrs. C. E. Hennigh; vice-president, Mrs. H. Bain; secretary, Mrs. W. M. McIntyre; treasurer, Mrs. Ruggles. The next meeting will be held on January 17, when Miss Alice Alexander, supervisor of primary grades in the Canal Zone schools, will be the speaker.

Church Work.

The monthly meeting of the Isthmian Ministers' Association was held in the Baptist Church at Culebra on Monday, January 8, at 2 p. m. The speakers were the Rev. E. G. Cooke, who gave a review of the book, "Theology and the Social Consciousness", by President King of Oberlin College, Ohio, and the Rev. J. C. Elliott, of Albany, a retired minister of the Presbyterian Church, who gave a retrospective view of his work of forty years in the ministry. The Association has taken up book reviews for the programs at its meetings. In December, at the meeting held at the Methodist Episcopal Church in Panama, the Rev. Charles O. Purdy, of Gatun, reviewed "The Preacher," by Professor A. S. Hoyt of Auburn, N. Y., and the Rev. Mr. Ports, of Panama, reviewed "The Work of Preaching", by the same author.

In the Commission chapel at Las Cascadas, preaching services are maintained every Sunday evening, the Rev. Charles Ports preaching twice in the month, the other speakers being provided by the Young Men's Christian Association. Beginning in February, a series of Tuesday evening services will be held, the preachers in charge to be the Revs. Carl H. Elliott, of Cristobal, Charles O. Purdy, of Gatun, and A. A. Nellis, of Empire.

The last services held in the Commission chapel at Culebra were on Sunday, January 7, when the Bishop of Cuba celebrated the Holy Communion at 8 a. m. The Sunday school was as usual at 9.30 a. m. and preaching services were held in the evening by the Rev. A. A. Nellis. The demolition of the building, made necessary by the encroachment of the Canal, was begun on the following day. The Culebra chapel was constructed in June, 1907, and was the fifth of the type to be erected after the authorization for such buildings by the Commission. The building will not be reconstructed.

The Cristobal Union Church expects to move into its new building in about a month. The building is a laborers' barrack which has been removed from Camp Bierd and will be reconstructed for church purposes on the triangle facing the old church building, now the court house. The interior of the building will be partitioned off into suitable class rooms for the Sunday school, leaving an auditorium with a seating capacity of about 300.

The Christmas cake sale held by the American Woman's Altar Society of St. Ferdinand's Church, Empire, netted about $25. On New Year's Day the Altar Society composed of West Indian and native women held an elaborate bazaar at which the receipts were $115. The regular monthly dance of the Men's Catholic Club was held in Kangaroo Hall on Saturday evening, January 6.

The Rt. Rev. Albion W. Knight, D. D., the Bishop of Cuba, sailed for Havana on January 11, after a visit to the Isthmus which extended over a period of two weeks. During that time he visited 11 missions of the church, confirmed more than 200 persons, ordained one candidate for priest's orders, and consecrated the church at Empire which was erected by the American residents of the village in 1908.

Red Cross Reception.

In connection with the public reception to be given to Miss Mabel T. Boardman, Chairman of the Executive Committee of the National Red Cross, on Saturday evening, January 13, in the National Theater at Panama, Red Cross tickets will be honored for transportation on trains Nos. 7 and 71, leaving Colon at 4.35 and 6.00 p. m., respectively, and for returning on train No. 64, leaving Panama at 11.50 p. m.

The recently elected officers for the ensuing term in the Isthmian Canal Rebekah Lodge No. 1, Gorgona, will be installed at the next regular meeting of the lodge on Friday evening, January 12. All Rebekahs in good standing are invited to be present.

Visit of The American Institute of Electrical Engineers.

The following program has been arranged for the entertainment of the members of the American Institute of Electrical Engineers on the occasion of their visit to the Isthmus, January 25 to February 1:

Thursday, January 25—New Orleans party due to arrive at 6 a. m.; New York party due to arrive 1 p. m. Both parties to be taken from Colon to Panama on a special train leaving Colon immediately after arrival of second party. The first party to arrive will make its headquarters aboard ship until the arrival of the second party. If the schedule of boats is not changed to bring their times of arrival close together, it is suggested that the party arriving first occupy the time waiting for the second party in sight-seeing in Colon and Cristobal, including inspection of the Commission hospital at Colon, cold storage plant at Cristobal, marine shops and dry dock at Cristobal, Quartermaster's Depot at Mount Hope, laborers' quarters at Camp Bierd.

Friday, January 26—Morning—Special train to leave Panama promptly at 8 a. m. Enter Culebra Cut at the south end, pass through the 8½ mile Cut, and go out on the 25-foot berm at the north end. Cross the Chagres River on Gamboa Bridge and continue over the tracks of the relocated Panama railroad, making a stop en route at the principal manufacturing and repair shops of the Commission at Gorgona. After visiting Gorgona shops, the party will be taken to Culebra where the relief maps and models of locks and dams in the Administration Building will be viewed, and the Culebra Cut viewed from the top of the hill; after which the party will be taken by special train to Empire and will lunch at the Commission hotel there. After lunch the Cut will be viewed from the Suspension Bridge, at Empire, and then the party will be returned to Panama to carry out the program for Friday afternoon.

Afternoon—Visit to Ancon Hospital and environs.

Saturday, January 27—Special train will leave Panama at 8 a. m., proceeding over the main line of the Panama railroad to Gatun; the morning to be spent at Gatun viewing locks, dams, spillway, power plant, reservoir, etc.; lunch at the Gatun hotel. Return over the relocated line to Frijoles, thence over the main line to Panama; Hotel Tivoli for dinner.

Evening—Reception and dance at the Hotel Tivoli by Tivoli Club.

Sunday, January 28—Trip will be taken to Taboga Island. Special train will leave Panama at 9.30 a .m. for Balboa, where party will embark on tugs which will take them to Taboga Island. Lunch will be served at the Commission's sanitarium on Taboga Island. Party will be returned to Hotel Tivoli in time for dinner.

(Note: In order to make arrangements for properly caring for the members of the party, it will be necessary to know the approximate number that expect to take the trip to Taboga, on the evening of January 26.)

Monday, January 29—Morning—Special train to leave Panama at 8 a. m. for the Pacific Division, visiting in turn Pedro Miguel Lock, Miraflores Locks, and Dam, hydraulic excavation in Canal prism and turbo-electric power plant at Miraflores, thence over the main line of the Panama railroad to Panama. Train will bring party back to Hotel Tivoli in time for lunch.

Afternoon—No special program. Individual trip to Old Panama is suggested.

(Note. A trip to the Porto Bello rock quarry and crushing plant and to the old town of Porto Bello may be taken on Monday instead of the trip by special train through the Pacific Division scheduled above, if desired. Members of Porto Bello party will leave Panama on regular Panama railroad train No. 2, at 6.30 a. m. for Mount Hope, embarking at Dock No. 13 immediately upon their arrival, on tug which will take them to Porto Bello and bring them back in time to catch the regular train which leaves Colon for Panama at 4.35 p. m. In order to make arrangements for properly caring for the members of the party it will be necessary to know the approximate number that expect to take the trip to Porto Bello on the arrival of the boats.)

Tuesday, January 30—Morning—Leave Panama by special train at 8 a. m. for Ancon quarry, thence to view operations on Balboa dump and inspect breakwater under construction to Naos Island. Return to Hotel Tivoli for early lunch at 11.15 a. m.

Afternoon—Special train leave Panama at 1 p. m. for Balboa, where marine shops and docks will be inspected. Party will embark on tugs at 2 p. m. for inspection of Canal and dredging work between Agua Dulce and the end of the Canal channel. Party will be landed at Balboa and returned to Panama by special train in time for dinner.

Wednesday, January 31—Morning—Leave Panama by special train at 8 a. m., going over the main line of the Panama railroad to Mindi, thence over the tracks of the Atlantic Division to the intersection of the French and American Canals. After inspection of excavation work at Mindi, tugs will be boarded, which will proceed down the American Canal and up the French Canal, returning to Dock No. 11, Cristobal, where the party will land and lunch at the Cristobal hotel of the Commission.

Afternoon—Party may either visit Cristobal and Colon, take a trip to Toro Point and inspect the construction of the breakwater there, or board the sea-going suction dredge *Caribbean* and take a trip on her while she is working. The party going to Toro Point or on the dredge *Carribbean* will embark at Dock No. 11 at 1 p. m. and will be returned to Cristobal in time to take special train for Panama which will leave Dock No. 11 at 4.15 p. m.

(Note. In order to make arrangements for properly caring for the members of party it will be necessary to know the approximate number that expect to take the trip to Toro Point or on the dredge *Caribbean* by January 29.)

Thursday, February 1—Special train with entire party will leave Panama for Colon at 8 a. m. The baggage should be properly marked with the ships' tags, stating name of ship and whether baggage is for the "Hold" or "Stateroom" of ship.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The following is the schedule for moving picture entertainments for the week, January 15 to 20: Monday, Corozal; Tuesday, Culebra; Wednesday, Empire; Thursday, Gatun; Friday, Gorgona; Saturday, Cristobal.

CULEBRA.

Because of the Red Cross entertainment in Panama, the smoker which was planned for January 13 has been postponed until the next week.

A Glee Club was organized two weeks ago and is planning to give a concert in March.

All men in Culebra desiring to learn how to play chess will kindly hand their names to the Secretary, and arrangements will be made.

A duck pin tournament has been organized with forty entries. This group has been divided into eight teams, and will begin the series of games this week.

A pool tournament is now being organized, and if there are any more men who want to enter, they should hand their names to the pool attendant.

The following high scores in duck pins were made during the week: Crain, 109, 106; Judge, 102, 108· Wheeler, 100; Kleane, 100; Sickler, 102; MacRae, 110; Case, 105; Mengel, 102.

EMPIRE.

A meeting of the Empire bowlers was held on Monday night, January 8, and it was decided to start a local tournament at once.

Twenty men are enrolled in the Spanish class which started on Thursday, January 4. Anyone desiring private lessons or a sufficient number wishing an advanced course in Spanish, will please make such desires known at the office.

Several men are in training for the indoor and outdoor athletic meets which are to be held January 19 and February 22, respectively.

The following high scores were bowled during the week ending January 6: Duck pins—J. King, 101; H. King, 102; Goolsby, 101; Pinney, 105, 101; Hartman, 100; Rodeighiro, 108, 103, 104; Danielson, 100; Dakin 109; Reed, 103; Myers, 105.

GATUN.

The first indoor athletic meet conducted on the Zone was held on Saturday evening, January 6, at the Gatun clubhouse. The seven men representing Gatun were Jackson, Ford, Matthews, Wright, Kerruish, Cole, and Rogers. Gorgona had eight men participating: Burns, Carpenter, Louden, Lainhardt, Charnley, Heider, Johnson, and Flynn. About 125 people attended. After the meet there was a "sociable" with music and refreshments. Miss Eva Harris of Gatun presented the winners with ribbons. The results of the various events were as follows:

Twenty-yard dash—Gatun first, Matthews, time 3 seconds; Gorgona second, Louden; Gatun third, Flynn.

Running Broad Jump—Gorgona first, Louden, distance 16 feet 6 inches; Gatun second, Matthews; Gorgona third, Carpenter.

Twelve pound Shot-put—Gatun first, Ford, distance 38 feet 8 inches; Gatun second, Rogers; Gorgona third, Carpenter.

Running High Jump—Gorgona first, Johnson, height 4 feet 9 inches; Gatun second, Rogers; Gorgona third, Lainhardt.

Pole Vault—Gatun first, Wright, height 7 feet 9 inches; Gorgona second, Heider; Gorgona third, Carpenter.

The relay race was won by the Gatun team, consisting of Matthews, Wright, Kerruish, Cole and Jackson Total points of the dual meet, Gatun, 29; Gorgona, 21

W. C. Gayer led the Drop-in-Discussion club on Sunday evening, January 7. Twenty-six men attended. The subject was "The Delusion of Faith without Works." Among those who participated were Messrs. Dillon, DeMoll, Smith, Farman, Van Vernschotin, Purdy, Dwelle, Fitzgerald, and Brown.

Arrangements are being made to have Burnsee, the champion checker player of the Isthmus, come to Gatun and play a simultaneous game with some of the local players.

During the month of December there were 15 entertainments held at the Gatun clubhouse to which the public were invited or an average of one every other night. The total attendance was 2,579. A gain of 3 was made in the membership of the clubhouse during the month of December, 1911. The total receipts at the soda fountain were $924.58.

The results of the boys' basket ball game on Saturday evening, January 6, are "Working Boys," 21; "School Boys," 20.

The handicap pool tournament which was started in November was brought to a close on Friday evening, January 5, when G. L. Hughes played off a tie and defeated C. M. Johnsoo, the latter being given a handicap of 20 balls. Hughes won by a single ball, making 80 balls to Johnson's 59. As a result of this game Hughes won the tournament and Johnson got second place. C. C. Jones defeated Eugene Miller in a tie game and thereby won third place. The prizes are gold medals for first and second places and a silver medal for third. Mr. DePoorter will donate a booby prize. The standing of the players when the tournament closed was:

Name.	Won.	Lost.	No. balls played.
Hughes	13	1	80
Johnson	13	1	60
Jones	11	3	60
Miller	11	3	60
Galloway	7	7	65
Bailey	10	4	65
Tounsley	8	6	60
Shailer	9	5	60
McKay	4	10	50
Sherrard	4	10	50
Coleman	7	7	60
Louner	1	13	75
Lenow	7	7	50
Myers	5	9	60
Harrold	0	14	50

Mr. DePoorter will play Mr. Hughes on Friday night, January 12. The former will play 150 balls to the latter's 110. A three-cushioned billiard tournament will start in the next few days with ten entries.

CRISTOBAL.

Five hundred and eighty people attended the band concert by the Camp Elliott Band on Monday evening, January 1.

Two hundred and sixty-five people were present at the moving picture show on Tuesday evening, January 2. The next in the series of moving pictures entertainments will be given on Friday evening, January 12.

The Spanish class is being orgainzed and will hold its first regular session on Monday evening, January 15. Any member of the Association, desiring to join the class, may do so by paying $2.50 for ten lessons. The hours of the session will be from eight to ten in the evening.

All members interested in indoor baseball should begin practice this week. The nights set aside for practice are Monday, Wednesday and Friday, ordinarily. It is expected that there will be practice for the rest of the season three nights a week.

On Wednesday evening, January 17, the literary and debating club will present an open program to which both men and women are cordially invited. The feature of the program will be an address by Commissioner Maurice H. Thatcher, Head of the Department of Civil Administration. After the program refreshments will be served.

WEATHER CONDITIONS, CANAL ZONE, DECEMBER, 1911.

Typical dry-season weather prevailed during the month in all sections of the Canal Zone. The rainfall was the lightest of record for the month of December at all stations except Ancon, Gamboa, and Colon. The average over the Pacific section was 24 per cent of the normal and over the Central and Atlantic sections 12 and 14 per cent respectively.

The average temperature was well above normal, being the highest of record for December at each of the three meteorological stations, while the average relative humidity and atmospheric pressure at all stations were the lowest of record for December. The atmospheric pressure reading at 29.628 inches at Ancon on the 19th is the lowest sea-level pressure that has been observed in the Canal Zone since American records have been kept.

There was a general deficiency in cloudiness over the Isthmus and a marked excess in wind movement.

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.	Date.		Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon	29.814	82.2	89	1	73	11	80	2.63	12.33	16	9.222	N.	34	N.E.	29
Culebra	29.802	79.5	92	21	68	13	89	0.31	7.81	6	6.427	N.W.	27	N.E.	28
Ancon	29.789	81.0	94	21	69	14	85	1.99	4.24	7	5.993	N.W.	21	N.	2

BASEBALL.

PANAMA CANAL LEAGUE.

STANDING OF CLUBS.

	P.	W.	L.	P.C.		P.	W.	L.	P.C.
Com. Sub.	3	2	0	1.000	Empire	3	1	1	.500
Ancon	3	2	1	.666	10th In'ty.	3	0	3	.000

SCHEDULE FOR JANUARY 14.

At Ancon—Ancon vs. 10th Infantry.
At Colon—Com. Sub. vs. Empire.

GAME AT COLON, DECEMBER 31, 1911.

Com.-Sub.	0	1	1	1	0	0	0	6	x—9
Infantry	0	0	2	1	1	0	0	2	0—6

GAME AT ANCON, DECEMBER 31, 1911.

Empire	0	1	1	0	2	0	0	2	0—6
Ancon	3	0	1	1	0	4	2	0	x—11

GAME AT COLON, JANUARY 1, 1912.

Com.-Sub.	5	0	1	2	2	0	0	1	2—13
Ancon	0	0	0	0	2	5	5	0	0—12

GAME AT EMPIRE, JANUARY 1, 1912.

Empire	0	1	0	0	0	0	0	9	0	0—1
Infantry	0	0	0	0	0	0	6	0	0	0—0

GAME AT ANCON, JANUARY 7, 1912.

10th Inf.	AB.	H.	PO.	A.	E.
Cassidy, 3b.	5	0	2	0	1
Webber, 2b.	5	1	2	6	0
Langner, lf.	5	1	2	0	1
Smith, W, ss	4	3	0	2	1
Trickey, c.	4	0	5	2	0
VanOtt'n, p	4	0	0	1	0
Brennan, cf.	1	0	1	0	0
Alley, cf.	1	0	0	0	0
Lucas, rf, p.	4	1	0	1	0
Deleh'ty, 1b	2	0	11	0	0
Totals	35	6	24	12	3

Ancon.	AB.	H.	PO.	A.	E.
Edwards, lf.	6	2	0	0	0
Lindberg, rf	2	1	1	0	0
Drennan, 2b	4	2	1	0	0
Smith, R, c.	5	2	4	3	1
Potter, ss.	4	2	2	3	0
Pearman, 3b	5	3	1	4	0
Guptil, 1b.	5	2	7	1	1
Nygreo, cf.	1	0	1	0	0
Yingling, c.	3	1	9	0	0
Murray, p.	5	3	1	0	1
Totals	40	18	27	11	3

Infantry	0	0	0	3	0	1	0	0	0—4
Ancon	0	0	0	5	2	2	1	3	x—13

Runs—Infantry: Smith (2), Webber, Langner; Ancon: Smith, Pearman (3), Potter, Guptil (2), Lindberg, Drennan, Yingling. Earned runs—Infantry 2, Ancon 9. Stolen bases—Infantry 3, Ancon 5. Sacrifice hits—Lindberg 2, Drennan, Yingling, Drennan. Two-base hits—Langner, W. L. Smith, Pearman, Lindberg, Guptil. Home runs—W. L. Smith, Potter. Double plays—W. L. Smith to Webber to Delehanty. First base on balls—Off Van Ottman 1, Lucas, 1, Murray 3. Struck out—By Van Ottman 4, Murray 10. Wild pitch—Van Ottman. Passed balls—Trickey 2. Hit by pitcher—By Murry 1, by Van Ottman 1. Time of game—2.05. Umpire—Foster. Scorer—Hoffman.

GAME AT EMPIRE, JANUARY 7, 1912.

Box score of the game at Empire, January 7, 1912:

Empire.	AB.	H.	PO.	A.	E.
Bryan, 3b.	6	0	0	5	0
VanZandt, lf	5	3	0	0	0
Dough'ty, rf	3	0	1	0	0
Markley, ss.	4	1	2	0	0
Hepler, 1b.	4	2	19	0	0
Murphy, cf.	5	2	0	0	0
Toone, 2b	5	0	0	4	1
Cushion, c.	4	1	10	1	0
Barnes, p.	0	0	0	1	0
Marshall, p.	5	1	0	7	0
*Pearce	1	0	0	0	0
Totals	42	11	†32	18	1

C.-S.	AB.	H.	PO.	A.	E.
Buchan'n, cf	4	0	0	0	1
Curtis, 2b.	5	2	3	1	0
Kellogg, 1b.	5	2	10	0	0
Mosher, p. ss	5	0	3	3	0
Sullivan, rf.	3	1	0	0	0
Sullivan, lf.	5	1	2	0	0
M'Custy 2b	2	1	1	2	0
Herring, 3b.	2	1	1	1	1
Beard, c.	5	2	12	0	2
Davis, p-ss.	4	0	0	6	0
Totals	40	11	33	14	4

*Pearce batted for Cushion in the 11th inning.
†T. Sullivan hit by a batted ball.

Empire	0	0	0	0	1	4	2	0	1	0	0—8
Com.-Sub.	1	3	0	3	0	0	0	0	1	0	0—8

Runs—Empire: Dougherty, Murphy (2), Bryan, VanZandt, Markley, Hepler; C.-S.: Buchanan, Beard (2), Curtis, Kellogg W. Sullivan, Herring. Earned runs—Empire 6, Com.-Sub. 6—Base on balls—Off Barnes, 2 in 2 innings, off Marshall 2 in 9 innings, off Davis 2 in 9 innings. Left on bases—Empire 5, Com.-Sub. 7. Wild pitch—Marshall First base on errors—Empire 2, Com-Sub. 1. Two-base hits—Van Zandt, Bryan, W. Sullivan, Curtis. Home runs—Murphy, Kellogg. Struck out—By Marshall 8, by Davis 6, by Mosher 3. Double plays—Beard to Mosher to Kellogg, Bear to Kellogg, Mosher to Curtis. Passed balls—Beard 1, Cushion 1. Hit by pitcher—By Marshall 2, (T. Sullivan, Herring.) by Davis 2, (Dougherty, Hepler). Time of game—Two hours and twenty-five minutes. Umpire—Irwin. Scorer—Garrett.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Hotel Tivoli, Ancon, C. Z., on Sunday January 14, 1912, at 7:30 p. pm. The program follows:

1. March—*In the Land of Harmony*..........Snyder
2. Selection—*Miss Nobody from Storland*...Howard
3. Intermezzo—*Gretchen*....................Martin
4. Overture—*Poet and Peasant*..............Suppe
5. (a) Two Step—*Mr. Rooster*..............Lampe.
   (b) —*That Mysterious Rag.* (By request)..Snyder.
6. —*The Only Tune the Band Could Play was Auld Lang Syne*..............Hayes
7. Flower Song—*Hearts and Flowers*.........Tobani
8. Medley Selection—*Summer Days*..........Recker
9. March—*Flag of Victory*..................Von Blon

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Gatun, January 21, at 5 p. m.

OFFICIAL CIRCULARS.

Assistant Engineer in Charge of Construction of Fortifications.

CULEBRA, C. Z., December 30, 1911.

CIRCULAR NO. 427:

Effective January 1, 1912, Lieut. Geo. R. Goethals, U. S. A., is appointed Assistant Engineer in charge of construction of fortifications, reporting directly to the Chief Engineer.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Reduction of Force—European Laborers.

CULEBRA, C. Z., January 6, 1912.

CIRCULAR NO. 192-A:

It is directed that whenever it may become necessary to discharge ten or more European laborers the Chief Quartermaster be notified by telephone, or otherwise, and that the men be held on the work until his representative can see them and arrange either for their employment elsewhere or their repatriation.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Broken Staybolts.

CULEBRA, C. Z., January 6, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

Circular No. 259-A, issued December 27, 1911, in regard to locomotive engineers plugging broken staybolts, is corrected to read Circular No. 259-B.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Responsibility of Traveling Engineers.

CULEDRA, C. Z., January 4, 1912.

CIRCULAR NO. 266-1:

The following rules will hereafter govern the determination of responsibility of Traveling Engineers when riding locomotives in the course of performance of their duties:

1. When the Traveling Engineer is merely running an engine to demonstrate a higher efficiency to the engineer he will be responsible only for the proper and safe handling of engine and train, the engineer to continue responsible for observance of rules, rights and orders pertaining to the train movements.
2. When the Traveling Engineer relieves an engineer, same shall be accompanied by an official transfer of all orders and instructions pertaining to the train movements, the same as in exchange of engines by engineers, and in this case the Traveling Engineer then assumes all responsibility.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Accountability for Locomotive Equipment.

CULEBRA, C. Z., January 5, 1912.

CIRCULAR NO. 411-B:

Difficulty in properly fixing property accountability for locomotive equipment has been encountered on account of locomotive engineers leaving personal tool equipment on locomotives which becomes checked with I. C. C. equipment. In order to keep property records accurately, locomotive engineers will in the future confine their personal tool equipment to such tools as are not furnished by the Isthmian Canal Commission. Any duplication by locomotive engineers of standard tools furnished by the Isthmian Canal Commission or the Panama Railroad Company is prohibited.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Hose for Cleaning Floors.

CULEBRA, C. Z., January 6, 1912.

CIRCULAR NO. 365-C:

The use of hose for the purpose of cleaning wooden floors in buildings of the Isthmian Canal Commission or of the Panama Railroad Company, other than stables, is prohibited.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Contracts for Clearing Trails.

The bids will be received by the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2:30 p. m., Friday, January 19, 1912, at which time they will be opened in public, for the clearing of the following trails: Cruces-Gamboa and Mount Hope-Majagual. Work shall be done in accordance with specifications to be obtained upon application to the Superintendent of Public Works, Isthmian Canal Commission, Administration Building, Panama. Proposals may be made for clearing each trail separately, or for both. Successful bidders will be required to furnish a bond or make a cash deposit in the sum of ten per cent of the amount bid as a guarantee that the work will be carried out. Proposals should be enclosed in a sealed envelop, marked "Proposal for Clearing Canal Zone Trails," and addressed to the undersigned. The Commission reserves the right to reject any and all bids, or accept any bid, as may be deemed to its interest, and to waive defects and informalities in proposals.

C. NIXON.
Purchasing Agent on the Isthmus.

Stages of the Chagres.

Maximum heights of the Chagres River for the weeks ending midnight, Saturday, December 30 and January 6. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Dec. 24..	127.3	93.6	46.3	13.8	13.8
Mon., Dec. 25..	126.5	92.9	46.2	13.9	13.9
Tues., Dec. 26..	126.4	92.8	45.6	14.0	14.0
Wed., Dec. 27..	125.9	92.3	45.0	14.0	14.0
Thurs., Dec. 28.	125.8	92.2	44.9	14.0	13.9
Fri., Dec. 29...	126.0	92.5	45.0	14.0	13.9
Sat., Dec. 30...	126.0	92.5	45.2	14.0	14.0
WEEK ENDING JANUARY 6, 1912.					
Sun., Dec. 31...	125.8	92.2	44.9	14.1	14.0
Mon., Jan. 1...	125.7	92.2	44.8	14.1	14.1
Tues., Jan. 2...	125.7	92.1	44.8	14.1	14.1
Wed., Jan. 3...	125.6	92.1	44.8	14.1	14.1
Thurs., Jan. 4..	125.6	92.1	44.8	14.1	14.1
Fri., Jan. 5....	125.6	92.0	44.6	14.2	14.2
Sat., Jan. 6....	125.6	92.0	44.6	14.4	14.4
Height of low water.......	125.0	92.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending January 17, 1912. (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
January 11.....	......	2.44	8.48	3.05	9.19
January 12.....	......	3.42	9.50	4.05	10.17
January 13.....	......	4.44	11.00	5.10	11.21
			P.M.		
January 14.....	......	5.50	12.15	6.16	......
January 15.....	12.28	6.53	1.25	7.21	......
January 16.....	1.30	7.50	2.22	8.17	......
January 17.....	2.23	8.38	3.06	9.04	......

Rainfall from January 1 to 6, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	T	6	T
Balboa	0	....	0
*Miraflores	0	....	0
Pedro Miguel	0	....	0
Rio Grande	0	....	0
Central Section—			
Culebra	0	....	0
*Camacho	0	....	0
Empire	0	....	0
Gamboa	0	....	0
*Juan Mina	0	....	0
Alhajuela	0	....	0
*El Vigia	.05	5	.05
*Gorgona	0	....	0
San Pablo	0	....	0
Tabernilla	0	....	0
Bohio	.10	6	.10
*Monte Lirio	.05	5	.09
Atlantic Section			
Gatun	0	....	0
*Brazos Brook	.03	5	.03
Cristobal	.02	5	.02
Porto Bello	0	....	†0

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5.00 p. m. January 5.

The following ships arrived at, or departed from, the port of Balboa during the week ending January 6:

Arrivals—January 1, *Pachitea*, from Callao; January 2, *Chile*, from Guayaquil; January 2, *Manavi*, from Buenaventura; January 3, *Limari*, from Valparaiso; January 4, *Stanley Dollar*, from San Francisco; January 6, *Peru*, from San Francisco.

Departures—December 31, *Peru*, (P. S. N.), to Guayaquil; January 1, *Quilpue*, to Valparaiso; January 4, *Aztec*, to San Francisco; January 5, *Ecuador*, to Guayaquil.

LOST—One crescent pin with chipped diamond, between house 14 and Y. M. C. A., Cristobal. If found please return to District Quartermaster's office, Cristobal.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Panama	P. R. R.	Tuesday	Jan.	9
Allianca	P. R. R.	Monday	Jan.	15
Colon	P. R. R.	Monday	Jan.	22
Advance	P. R. R.	Saturday	Jan.	27
Panama	P. R. R.	Saturday	Feb.	3
Allianca	P. R. R.	Friday	Feb.	9
Colon	P. R. R.	Friday	Feb.	16
Advance	P. R. R.	Friday	Feb.	23
Panama	P. R. R.	Thursday	Feb.	29
Allianca	P. R. R.	Wednesday	Mar.	6
Colon	P. R. R.	Wednesday	Mar.	13
Advance	P. R. R.	Tuesday	Mar.	19
Panama	P. R. R.	Tuesday	Mar.	26

CRISTOBAL TO NEW YORK.

Advance	P. R. R.	Monday	Jan.	15
Panama	P. R. R.	Sunday	Jan.	21
Allianca	P. R. R.	Sunday	Jan.	28
Colon	P. R. R.	Saturday	Feb.	3
Advance	P. R. R.	Friday	Feb.	9
Panama	P. R. R.	Friday	Feb.	16
Allianca	P. R. R.	Thursday	Feb.	22
Colon	P. R. R.	Thursday	Feb.	29
Advance	P. R. R.	Wednesday	Mar.	6
Panama	P. R. R.	Wednesday	Mar.	13
Allianca	P. R. R.	Tuesday	Mar.	19
Colon	P. R. R.	Tuesday	Mar.	26
Advance	P. R. R.	Monday	Apr.	1
Panama	P. R. R.	Sunday	Apr.	7

NEW YORK TO COLON.

Sibiria	H.-A.	Friday	Jan.	5
Tivives	U. F. C.	Saturday	Jan.	6
Thames	R. M.	Saturday	Jan.	6
Zacapa	U. F. C.	Wednesday	Jan.	10
Prinz Eitel Friedrich	H.-A.	Saturday	Jan.	13
Sixaola	U. F. C.	Saturday	Jan.	13
Almirante	U. F. C.	Wednesday	Jan.	17
Prinz Sigismund	H.-A.	Friday	Jan.	19
Carrillo	U. F. C.	Saturday	Jan.	20
Trent	R. M.	Saturday	Jan.	20
Santa Marta	U. F. C.	Wednesday	Jan.	24
Bluecher	H.-A.	Thursday	Jan.	25
Prinz August Wilhelm	H.-A.	Saturday	Jan.	27
Turrialba	U. F. C.	Saturday	Jan	27
Metapan	U. F. C.	Wednesday	Jan.	31
Altai	H.-A.	Friday	Feb.	2
Tivives	U. F. C.	Saturday	Feb.	3
Oruba	R. M.	Saturday	Feb.	3
Moltke	H.-A.	Monday	Feb.	5
Zacapa	U. F. C.	Wednesday	Feb.	7

COLON TO NEW YORK.

Metapan	U. F. C.	Thursday	Jan.	11
Prinz August Wilhelm	H.-A.	Tuesday	Jan.	16
Metapan	U. F. C.	Thursday	Jan.	18
Sibiria	H.-A.	Saturday	Jan.	20
Tivives	U. F. C.	Tuesday	Jan.	23
Arcadian	R. M.	Tuesday	Jan.	23
Zacapa	U. F. C.	Thursday	Jan.	25
Prinz Eitel Friedrich	H.-A.	Tuesday	Jan.	30
Sixaola	U. F. C.	Tuesday	Jan.	30
Almirante	U. F. C.	Thursday	Feb.	1
Prinz Sigismund	H.-A.	Saturday	Feb.	3
Carrillo	U. F. C.	Tuesday	Feb.	6
Magdalena	R. M.	Tuesday	Feb.	6
Santa Marta	U. F. C.	Thursday	Feb.	8

NEW ORLEANS TO COLON.

Abangarez	U. F. C.	Saturday	Jan.	6
Heredia	U. F. C.	Wednesday	Jan.	10
Atenas	U. F. C.	Saturday	Jan.	13
Orleanian	U. F. C.	Wednesday	Jan.	17
Parismina	U. F. C.	Saturday	Jan.	20
Cartago	U. F. C.	Wednesday	Jan.	24
Abangarez	U. F. C.	Saturday	Jan.	27
Heredia	U. F. C.	Wednesday	Jan.	31
Atenas	U. F. C.	Saturday	Feb.	3

COLON TO NEW ORLEANS.

Turrialba	U. F. C.	Thursday	Jan.	11
Cartago	U. F. C.	Thursday	Jan.	11
Abangarez	U. F. C.	Thursday	Jan.	18
Heredia	U. F. C.	Thursday	Jan.	18
Atenias	U. F. C.	Thursday	Jan.	25
Orleanian	U. F. C.	Thursday	Jan.	25
Parismina	U. F. C.	Thursday	Feb.	1
Cartago	U. F. C.	Thursday	Feb.	1

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages. The *Altai* cabins are all sold at second cabin rates.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a.m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; ships for New York via Kingston on Thursdays at 11 a. m.; for Bocas del Toro on Mondays at 6 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JANUARY 17, 1912. No. 21.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Removal of Track at Pedro Miguel.

Work on the center and west side walls of the lock at Pedro Miguel having been practically completed, the removal of the inclined trestle in the west chamber, carrying narrow and 5-foot gage tracks from the upper to the lower level, has begun and the chamber will be cleared of debris to facilitate the erection of the gates. The grade of the trestle is $3\frac{1}{3}$ per cent and its length is slightly over 1,000 feet. Most of the timber is in good condition and will be transferred to Miraflores Locks for trestle work.

Automobile Fire Apparatus.

Award has been authorized to the Webb Motor Fire Apparatus Company of St. Louis for two automobile fire pumps and trucks for $8,000 each. These are the machines authorized, one for Cristobal and one for Ancon, a description of which was published in THE CANAL RECORD of October 25, 1911. The automobiles must be capable of running 20 miles an hour up a 12 per cent grade or 50 miles an hour on level roads. The pumps will have a capacity of not less than 700 gallons a minute against a pump pressure of 120 pounds, and their parts will be so made that they can pump muddy salt water without corrosion or deterioration.

Requisition has been made for the purchase of an automobile tractor and a supplementary pair of wheels with transmission axle, to be substituted for horses for drawing the No. 3 Silsby fire-engine at Cristobal. The tractor will consist of a 40-horse power, 4-cylinder, gasoline engine, mounted by means of a vanadium steel fork over a heavy hickory wheel, about 32 inches high and capable of being turned through an angle of 85 degrees to guide the apparatus. The engine, which will be water-cooled, is to be equipped with a double ignition system, in which a magneto will be supplemented by an induction coil with batteries, and to have gears for three speeds forward and one reverse. It is to be capable of drawing the fire-engine, which weighs 7,000 pounds, 25 miles an hour on a level road and 10 miles an hour up a 10 per cent grade. Pumping at fires will be done by the steam engine of the present equipment, and not by the gasoline engine, as in the case of regularly built automobile fire-engines. It is estimated that the chauffeur can stoke the steam engine, thus doing away with the employment of one man, whose salary would be $1,500 a year; this, with the economy of automobile over horses, aggregates a yearly saving of about $1,922, according to a report of the Fire Chief. The estimated cost of tractor and new front wheels and axle is $2,875, which would be reduced by the sale of the team of horses now in use with the fire-engine.

Voyage of the Corozal.

The ladder dredge *Corozal*, which left Falmouth for Panama via the Strait of Magellan on December 1, but had to turn back because of heavy seas which stove in five frames at the forecastle above the water line, has been repaired and made a second start on December 29.

Upper Approach Wall at Pedro Miguel.

In the construction of the upper approach wall at Pedro Miguel Lock, about 5,000 cubic yards of concrete, out of the requisite 30,000 yards, have been laid. The wall will be cellular, consisting essentially of two side walls, varying in thickness from 27 to 14 inches, connected at intervals of fifteen feet by transverse vertical walls, or counterforts, 18 inches thick. The top will be covered with reinforced concrete flooring, in which will be laid the rack and return tracks for the towing locomotives.

The foundation for the structure is the rock bottom of the upper approach channel, which is in effect a part of Culebra Cut. Each side wall will be based on a level bottom slab, 4 feet wide, with its thickness varying with the contour of the rock on which it rests. The surface of the slab is at 37 feet above sealevel and the wall will rise 62 feet above it, so that the top is to be 14 feet above the normal level of the water in the approach channel. The lower portions of the side walls are being heavily reinforced, having 70-pound rails placed vertically at intervals of 6 feet, with connections of twisted steel bars. The outer faces will be vertical and the distance between them, that is, the thickness of the completed wall, is to be 58 feet. The wall will be solid for a distance of about 30 feet from the upper end and will run for a distance of about 1,154 feet to the point at which, hypothetically, the approach wall joins the center wall, the two being in effect continuous. Between these solid portions, the side walls will be joined every fifteen feet by counterforts, resting on rock and rising to the height of the side walls. In construction, the space between two counterforts is bridged by an arch of planks, on which the concrete is dumped for distribution, as it would be impracticable to fill the narrow forms separately from the 2-cubic yard buckets in which the concrete is hauled from the permanent mixing plant over narrow-gage railroad.

Dredging at Pacific Entrance.

The time of operation of the dipper dredge and two of the ladder dredges at work in the Pacific entrance to the Canal has been cut one half, the dipper dredge now operating in two 5-hour shifts daily, and the ladder dredges in two 6-hour shifts. This half-time work is necessary because the dredges can work only from mean tide to low tide and back, the dipper dredge being incapable of digging more that 40 feet below the water and the ladder dredges 40 and 35 feet.

The dredge *Badger* has begun work in the basin in front of the lumber wharf in order that the channel up to the dock may be navigable by the time the wharf is completed. The wharf is being constructed on the land, and the basin will be dredged out up to the front of the new structure.

Borings on the site of the dry dock have been begun to determine the character of the material under the proposed foundation. On the east and west wall line of the dock and the approach basin, holes will be at 100-foot intervals, and along the center line at 200-foot intervals. The borings on the center line of the dock will go down to 65 feet below mean tide, and the larger part of the work will be through hard rock. Every third boring on the wall site will be carried down to 45 feet below mean sealevel, the others to five feet depth in rock.

The suction dredge *Culebra*, having been repaired at the shipways, resumed work in the channel on the morning of January 9.

Termination of Distillery Lease.

The lease to Antonio Andrade, a Greek resident in the Canal Zone, of a rum distillery and 23 hectares (56.83 acres) of cane land near Gorgona, has been cancelled and the movable property will shortly be offered at public auction. This action was necessitated by the advance of the Canal construction and was in accordance with the terms of the lease. Andrade's property was expropriated in August, 1908, by the United States and as provided by the treaty with the Republic of Panama, the value was adjudicated by a joint commission, which awarded the owner $90,000 for the distillery and the adjoining property known as "Hacienda Andrade." Permission was then secured from the Secretary of War to lease the property till such time as the Canal work should demand the right of way. The distillery and a portion of the adjoining land were leased to Andrade at what was termed a fair rental value: for one year from January 13, 1909, for $1,500; for the succeeding year for $300; and for one year from January 13, 1911, for $100. The decline in rental value is because of the exhaustion of the cane which was growing on

NOTES OF PROGRESS.

(Continued.)

the land at the time it was first leased. The distilling equipment consists essentially of two copper stills, of 12.25 and 18.90 litres capacity, and accessory engines, cane mills, tanks and storage houses.

Lidgerwood Unloading.

The following statement shows the number of Lidgerwood cars unloaded by the Central Division during the month of December, 1911:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa	4	1,199	23,980
Miraflores	3	566	11,320
Gamboa	*4	1,140	23,937
Total	11	2,905	59,237

*1 unloader worked but 4 days.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 75 per cent completed, 169,088 cubic yards, out of a total of 225,000, having been placed at the close of work on January 13. A statement of the amount laid each working day last week, and of the total in place, follows;

DATE.	Concrete Laid.	Hours worked	No. Mixers.
January 8	228	7.30	1
January 9	148	4.30	1
January 10	364	13.30	2
January 11	244	16.00	2
January 12	308	16.00	2
January 13	360	16.00	2
Total	1,652	73.30	1 66
Previously reported	167,436		
Grand total	169,088		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending January 13, follows:

DATE.	Hours worked.	Cubic Yards.
January 8	4.52	1,978
January 9	3.31	1,765
January 10	3.32	1,691
January 11	3.40	1,723
January 12	3.27	1,736
January 13	4.47	2,223
Total	23.49	11,116

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending January 13, follows:

DATE.	Hours worked.	Cubic Yards.
January 8	5.35	2,310
January 9	7.30	2,889
January 10	7.30	2,870
January 11	6.50	2,683
January 12	6.50	2,455
January 13	4.25	1,673
Total	38.40	14,880

Health Work in Colon.

The work of district nursing among the poor people of the city of Colon was resumed on January 12, two nurses of the Colon Hospital staff being detailed for the service. The city will be divided into districts as before and the principal duty of the nurses will be to combat infant mortality.

The second in the series of free health lectures for the people of Colon will begin on January 25. Dr. A. J. Orenstein, of the Department of Sanitation, will speak on the fly as a carrier of disease. A new set of films will be exhibited. The managers of this work are planning for an afternoon for mothers when a lecture on infant-feeding will be given. The lecture will be illustrated by drawings and will show sanitary methods of preparing the evaporated milk and other infants' foods obtainable on the Isthmus. The lecture will be given by a doctor of the Colon Hospital staff and one of the district nurses will be present.

CONCRETE WORK IN THE LOCKS.

Over 76 per cent of the concrete for the locks is in place, the amount at the close of work on January 13, being 3,193,425½ cubic yards, out of a total of approximately 4,199,400. A total of 22,619½ cubic yards of concrete was laid in the locks during the week ending January 13.

GATUN LOCKS.

Over 89 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on January 13, being 1,781,516½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending January 13, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
January 8	1,170	18.44	4	430	5.40	2	....	1,647¾
January 9	738	13.20	4	120	2.40	2	....	923
January 10	674	11.04	2	378	4.40	2	....	1,120
January 11	882	14.32	4	380	4.40	2	....	1,331
January 12	962	15.39	4	336	4.40	2	....	1,362
January 13	1,204	26.25	4	416	5.40	2	....	1,670¾
*Portable mixers	....	....	......	364½	....	......	....	....
Total	5,630	99.44	3.66	2,424½	28.00	2	....	8,054½
Previously reported	....	....	......	....	....	......	....	1,773,462
Grand total	....	....	......	....	....	......	....	1,781,516½

*The 364½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days: January 8th, 48; January 9th, 65; January 10th, 68; January 11th, 69; January 12th, 64; January 13th 50½.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 95 per cent completed, 796,686 cubic yards, out of a total of 837,400 bucket measurement, having been placed at the close of work on January 13. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
January 8	324	9.67	2	302	24.00	3	....	626
January 9	312	9.50	2	249	21.75	3	....	561
January 10	448	13.50	2	178	15.50	2	....	626
January 11	360	11.00	2	208	17.25	3	....	568
January 12	290	9.00	2	211	17.50	3	....	501
January 13	308	9.25	2	179	17.50	3	....	487
Total	2,042	61.92	2	1,327	113.50	2.83	....	3,369
Previously reported	....	....	......	....	....	......	4,423	793,317
Grand total	....	....	......	....	....	......	4,423	796,686

MIRAFLORES LOCKS.

Over 45 per cent of the concrete for the system of two twin locks at Miraflores was in place on January 13, the total amount on that date being 615,503 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.	Cu. Yds.								Cu. Yds.	Cu. Yds.
Jan. 8	1,696	38.00	7	444	6.42	2	261	19.50	3	....	2,401
Jan. 9	1,180	33.08	7	158	2.33	1	194	13.00	2	....	1,532
Jan. 10	1,322	41.33	7	370	5.50	2	241	20.00	3	....	1,933
Jan. 11	1,354	35.33	7	220	3.42	2	232	14.50	3	....	1,806
Jan. 12	1,322	32.17	6	362	5.25	2	196	12.00	2	....	1,880
Jan. 13	1,166	26.33	5	272	3.83	2	206	11.50	2	....	1,644
Total	8,040	206.24	6.5	1,826	26.75	1.83	1,330	90.50	2.5	....	11,1 96
Previously reported	....	....	......	....	....	......	....	....	......	3,693	604,307
Grand total	....	....	......	....	....	......	....	....	......	3,693	615,503

LAWN TENNIS.

Schedule and Rules for Isthmian Association Tournaments.

At a meeting of the Isthmian Tennis Association held at the University Club on January 7, the following schedule of tournaments was decided upon, and the following rules covering same were adopted.

Date.	Place.	Class.
January 14	Empire	Doubles
January 28	Cristobal and Gatun	Singles
February 11	Tivoli (Ancon)	Doubles
February 22	Panama	Singles
March 3	Gatun and Cristobal	Doubles
March 17	Ancon (Hospital)	Singles
April 7	Culebra	Doubles
April 21	Panama (Maduro-Lupi Cup)	Doubles
May 12	Empire	Singles
May 30	Ancon, Tivoli, and Panama	Doubles and Singles
June 16	Open	Singles

The tournament of May 30 to be open to any member of an Isthmian League club. Winners to be known as champions of the Isthmus of Panama for 1912. If not completed on May 30, to be finished on the three courts named on June 2. Entrance fee of $1.00 for each player for this tournament only.

Clubs shall be eligible to representation by one player in singles and on team in doubles in each of the Association tournaments for the season of 1912, on payment of a season fee of $10.00. except for the Isthmian Championship tournament for which an entrance fee of $1.00 will be charged each contestant.

The tournament of April 21 shall be named the Maduro-Lupi Tournament, and the winning club shall become custodian of the Maduro-Lupi Cup for 1912 under the terms upon which it was presented.

Each match shall consist of best two out of three sets. A recess of seven minutes may be allowed at option of either player between second and third sets.

Players shall report to the committee at the courts ready for play at 9 a. m. (due allowance being made for trains arriving about that time), and thereafter may not leave except on excuse from a referee, no excuse to be allowed which may interfere with the progress of the tournament. Drawing for places shall be made, and play shall begin as promptly after 9 a. m. as possible, and play shall be continuous, provided that play may be stopped at option of any player after 5 p. m.; and provided also that time for midday meal, not exceeding two hours, shall be allowed by the referee, depending on the progress of the play. No player shall be obliged to engage in a match within one hour from a preceding match in which he was contestant.

In case a tournament is not completed on day of date scheduled, it shall be continued on the succeeding Sunday on the same courts and with the same contestants.

The following have been elected by the board to serve as referees for the season of 1912: Mr. Pulsifer, Judge Blackburn, Mr. Hoyte, and C. Melhado. Their duties shall be to appoint umpires and linemen, have general charge of tournaments, and report results of matches to the Secretary. A referee for each tournament will be designated by the secretary from the above.

Where any of the above rules may conflict, rules of the U. S. N. L. T. A., for 1911, shall govern.

It is expected that there will be clubs in the Association as follows: Panama, Ancon, Tivoli, Corozal, Culebra, Empire, Tenth Infantry, Gorgona, Camp Elliott, Gatun, Cristobal, Colon.

At the lawn tennis tournament at Empire on January 14, Empire won three matches with the loss of but one set. There were five teams represented with the following results: Preliminaries—Empire defeated Cristobal, 11-9, 6-4; Ancon defeated Culebra, 6-4, 6-3. Semi-finals—Empire defeated Tivoli, 6-4, 8-6, and in the finals defeated Ancon, 6-4, 4-6, 6-3.

Canal Zone Schools in December.

During the month of December, 1911, the average daily attendance at the schools maintained by the Commission for white children was 977.2, or 84.2 per cent of the net enrollment, which was 1,161. In the colored schools the average attendance was 703.9, or 62.0 per cent of the net enrollment of 1,135. A total of $68 for tuition of children of white non-employes of the Commission or the Panama railroad, not living in the Canal Zone, was collected at the Ancon and Cristobal schools. The medical inspection of the pupils in the white schools at Paraiso and Bas Obispo was made during the month by the respective District Physicians. This completes the medical inspection of all schools except those at Las Cascadas and Ancon, where delay has been occasioned by changes of the physicians. From statistics available it is estimated that the total expenditures for the fiscal year commencing July 1, 1911, amounted at the close of the year 1911 to $43,000.

Postals Savings Banks.

The Postal savings bank system for the Canal Zone, authorized in Executive Order dated September 8, 1911. details concerning which were published in THE CANAL RECORD of November 22, has not been established on account of the failure to arrive of necessary forms, certificates and the like from the Post Office Department offices in Washington. These blanks were shipped from New York on January 15, on the steamship *Allianca*, due to arrive at Cristobal on January 21, and it is the expectation of the Canal Zone Department of Posts and Revenues to have the system in operation by the latter part of this month.

LABOR FORCE AND QUARTERS IN DECEMBER.

The total force at work on the Canal and Panama railroad at the close of December, 1911, was 37,826, the second largest force employed since the canal work was begun, the largest being that at the close of March, 1910, when the force numbered 38,676. The force for November, 1911, was 37,590, for December, 1910, 35,132; for December, 1909, 35,435.

DEPARTMENT.	SILVER EMPLOYES.*															
	Artisans.						European Laborers.		West Indian Laborers.					Total Silver.	Total Gold.	Grand Total
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Const'ct'n and Eng'r'ng.	4.299	11	14	234	708	2.872	3.933	751	106	545	4,674	2,729	250	21,126	3,286	24,412
Civil Administration....	182	..	..	2	4	27	......	......	...	.....	......	15	....	230	378	608
Sanitation........	672	..	..	3	3	3	......	......	2	1	9	291	1	985	368	1,353
Quartermaster's.........	887	..	1	120	178	180	142	4	27	.....	57	811	†12	2,419	207	2,626
Subsistence..............	664	..	..	2	.....	1	......	......	...	.....	......	......	....	667	54	721
Disbursements..........	7	..	..	....	.....	......	......	......	...	.....	......	......	....	7	27	34
Examinat'n of Accounts.	5	..	..	....	... .	......	......	......	...	.....	......	......	....	5	100	105
Total.................	6.716	11	15	361	893	3,083	4,075	755	135	546	4,740	3,846	258	25,439	4,420	29,859
Month previous.........	6,764	12	19	389	887	2,941	4.200	591	152	592	4,475	4,203	274	25 504	4,279	29,783

Panama railroad force, 4,568; Panama railroad relocation force, 2.235; Panama railroad commissary force, 1,164 Total. 7,967. I. C C. force. 29.859. Grand total, 37,826.

*All wages specified are in gold.

†Includes 5 at 5 cents.

Employes on the Canal work in December, 1911 numbered 29,859; Panama railroad, 4,568; Panama railroad relocation, 2,235; Panama Railroad Commissary, 1,164. The white Americans, known as "gold" force, numbered 4,420, as compared with 4,279 in November, 1911. and 4,705 in December, 1910. The force report of the Department of Construction and Engineering for December 27, follows:

DIVISION.	SILVER EMPLOYES.*															
	Artisans.						European Laborers.		West Indian Laborers.					Total Silver.	Total Gold.	Grand Total.
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Chief Engineer	85	..	..	12	19	36	58	121	...	21	152	98	10	612	198	810
Mechanical.............	240	5	2	29	69	493	72	1	...	.....	816	20	10	1,757	759	2.516
Atlantic..............	1,776	5	10	97	331	1,018	1.115	312	...	88	969	368	36	6,125	868	6,993
Central..................	1,056	1	..	30	111	472	1,884	107	89	436	987	2,016	144	7,333	779	8,112
Pacific....................	1,142	..	2	66	178	853	804	210	17	. ...	1,750	227	50	5.299	682	5,981
Total	4,299	11	14	234	708	2,872	3,933	751	106	545	4,674	2,729	250	21,126	3,286	24,412
Month previous.........	4,330	12	18	228	713	2,791	4,048	585	126	589	4,365	2,917	266	20,988	3,186	24,174

*All wages specified are in gold.

QUARTERS.

On January 1, there were 25,105 occupants of Commission quarters. Of these, 9,167 were white Americans of whom 5,188 were men, 2,067 were women, and 1,912 were children. There were 6,358 Europeans of the laborer class, of whom 5,696 were men, 271 women, and 391 children. There were 9,580 West Indian negroes, of whom 7,202 were men, 1,070 women, and 1,308 children. Included in the above were 301 Asiatics, and 87 Panamans.

STEAMSHIP SERVICE.

Increase in Regular Service.—Cruises for Tourists.

The United Fruit Company announces the inauguration of a semiweekly steamship service between New York and Colon. Beginning with the departure from New York on January 6 of the *Tivives*, which arrived at Colon on January 13, the weekly service will be augmented by the use of three new ships and a schedule of departures from New York on Wednesdays and Saturdays, with arrivals at Colon on Thursdays and Saturdays, will be put into effect. From Colon the sailings for New York are to be on Tuesdays at 1.30 p. m. and on Thursdays at 11 a. m., with arrivals in New York on Tuesdays and Thursdays, respectively, a week later. The weekly service between New Orleans and Colon will continue as heretofore. The line is preparing to transport a number of parties of tourists and professional persons to and from the Isthmus during the dry season.

An agent of the Royal Dutch West India Mail Steamship Company has recently made a visit to the Isthmus for the purpose of investigating conditions in Colon to the end that the company may make that city a port of call for ships en route to New York from the Netherlands by way of Curaçao.

The Hamburg-American Line will conduct, in addition to its regular service, special tourists' cruises, sailing from New Orleans and New York. The *Fuerst Bismarck*, a vessel of 9,500 tons, 468 feet long and 55 feet beam, with a speed of 15 to 16 knots, will leave New Orleans on January 18, with about 225 tourists, members of the Illinois Manufacturers' Association, with their wives and daughters. The party is due to arrive at Colon on January 24 and to leave on January 25.

Anent the cruises to the West Indies for the year 1912, which were scheduled to be made by the *Moltke* and the *Hamburg*, 12,000 tons each, the demand for accomodations aboard these steamers has so surpassed expectations that the line has found it necessary to replace the sailings of the *Hamburg* by the *Victoria Luise* (16,500 tons), said to be the largest cruising steamer in the world, and the largest vessel that has ever been in the West Indies. This vessel, formerly the *Deutschland*, has lately been remodelled and converted into a cruising steamer. The *Victoria Luise* is 663 feet long and has accomodations for 500 to 550 passengers, all of whom can be seated at one time in the dining saloon. The *Victoria Luise* will call at Colon on February 20 and March 20.

Besides the cruises to be made by the *Victoria Luise*, the *Moltke* will call at Colon on February 5 and March 8, with about 350 passengers on each cruise, and the *Bluecher* will call at Colon, April 3, with about 250 passengers.

The line of the Royal Mail Steam Packet Company between Southampton and New York, by way of the West Indies and Colon, will not be increased in its regular service; but the twin-screw cruising yacht *Arcadian*, designed especially for the use of tourists and carrying very little freight, left Southampton on January 3, with all accommodations taken. Some of the passengers will disembark at Jamaica and the company is advertising that the *Arcadian* will sail from Colon for Jamaica, Cuba and New York on January 23. The vessel accommodates 434 passengers.

The White Star Line and the Red Cross Line, which have no regular service to the Isthmus, will conduct special tours as follows: the *Stephano*, of the Red Cross Line, will sail from New York on January 27, for a cruise of the Caribbean Sea, including a stop for inspection of the Canal Zone; the White Star Line will conduct two tours through the Spanish Main, leaving New York on January 20 and February 24 on the *Laurentic*, a triple screw vessel of 14,892 tons.

Red Cross Meeting.

A reception tendered by the Canal Zone Chapter of the American National Red Cross to Miss Mabel Boardman of the Central Committee, at the National Theatre, Panama, on Saturday evening, January 13, was attended by a large number of Red Cross members from the Zone and Panama. Col. Geo. W. Goethals and Miss Boardman were the speakers. In addition, there were musical numbers by a quartette consisting of Mrs. A. S. Boyd, Mrs. G. R. P. Kramer, and Messrs. W. S. Ross and E. Paul Case, with Mr. A. B. Dickson at the piano, and violin selections by Mr. George Arnold, accompanied by Miss Dorothy Layland. The band of the Tenth Infantry also played.

Red Cross Finances.

A financial statement of the Canal Zone chapter, American National Red Cross, for the month of December, follows:

	RECEIPTS.		
December	1, On hand	$2,006.75	
December	15, Donated by Mr. J. McGregor	1.50	
December	29, Receipts from sale of Red Cross Christmas Seals	245.18	
December	30, Interest credited at bank	3.23	
December	31, Membership dues received during month	11.00	
Total receipts			$2,267.66
	DISBURSEMENTS.		
December	6, Relief of Colon Fire Sufferer	$25.00	
December	6, To Mr. Poole, express on supplies	1.05	
December	9, Supplies and printing	9.13	
December	15, Relief of Zone prisoner, deported	10.00	
December	20, Relief of Colon Fire sufferer	25.00	
Total disbursements			$70.18
December	31, Balance on hand		$2,197.48

C. A. DEVOL, *Chairman and Acting Treasurer.*

CIVIL SERVICE AND POLITICS.

Resigning with Hope of Reinstatement after Campaign.—Announcement of Examination.

The Civil Service Commission submitted to the President certain propositions for instructions, and has received the following reply:

THE WHITE HOUSE,
Washington, D. C.
December 26, 1911.

Gentlemen:

I have your letter of December 21st, and answer your questions categorically.

I am of opinion that in accord with the spirit of our institutions in recognizing the fundamental right of citizenship, a citizen who resigns to become a candidate for office and pursues a course free from coercion, bribery, or other scandalous or unlawful conduct should not thereby be prejudiced by being refused reinstatement within the period of eligibility prescribed by the rules, nor do I think any distinction should be made between the person who resigns and becomes a candidate and one who resigns, not to be a candidate, but to manage or take part in a political campaign for a party. If he wishes to run the risk of finding an Executive who will reinstate him, and he resigns in order to avoid a violation of the rules as to participation in electoral contests by members of the Classified Service, I do not see why it should demoralize the service to allow him to resign and run the risk of securing the approval of his reinstatement by the Executive within a year after he has resigned.

Sincerely yours,
WM. H. TAFT.

The Civil Service Commission,
Washington, D. C.

Civil Service Examination.

Examination for the position of immigrant inspector, Immigration Service, will be held at Culebra probably on February 25. The supply of the announcement of this examination which was received in this office was only sufficient to supply one each to the seven Commission clubhouses and the bulletin board of the Administration Building at Ancon. Intending applicants should consult one of the announcements for information in regard to the examination to avoid unnecessary correspondence. Applications must be received not later than February 2.

In answer to questions as to bona fide residence, applicants should note that such residence must be shown in a State or Territory of the United States *up to the time of the application.*

JOHN K. BAXTER.
Secretary, Isthmian Civil Service Board.

LOST—Sunday morning, January 14, at Pedro Miguel or Balboa docks, a gold K. of P. charm. A reward is offered for its return to the Quartermaster's office, Pedro Miguel.

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to November 30, 1911, follows:

PERIODS.	Department of Civil Administration	Department of Law	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total.
To June 30, 1909	3,427,090.29	....	9,673,539.28	69,622,561.42	78,022,606.10	....	160,745,797.09
Fiscal year, 1910	709,351.37	....	1,803,040.95	26,300,167.05	2,863,088.83	....	31,675,648.20
Fiscal year, 1911	755,079.44	....	1,717,792.62	27,463,401.31	3,112,334.60	....	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,089,361.82	312,920.11	....	2,615,340.33
August, 1911	74,768.45	1,878.27	156,954.79	2,287,506.30	355,087.42	86,243.14	2,962,438.37
September, 1911	64,905.24	1,805.83	146,912.23	2,212,702.66	234,233.58	86,275.56	2,746,835.10
October, 1911	64,143.49	1,586.71	152,252.71	2,751,377.24	323,154.80	32,061.45	3,324,576.40
November, 1911	66,491.92	2,502.39	138,404.22	2,346,719.44	200,614.00	93,952.56	2,848,684.53
Total	5,234,725.42	10,300.55	13,926,532.63	135 073,797.24	85,424,039.44	298,532.71	239,967,927.99

AGUA CLARA PLANT.

Filtration by Gravity Instead of under Artificial Pressure.

The new filtration plant at Agua Clara Reservoir is of a type new to the Isthmus, though it is being adopted in the States.

The raw water from the reservoir at Agua Clara passes into a mixing box, where it receives an infusion of alum, in the proportion of 1.5 grains per gallon of raw water and is mixed by passing over submerged weirs and under weirs projected from the top of the box, on its way to the sedimentation basin. In the mixing box, which is 30 feet 6 inches long by 6 feet 4 inches wide and 5 feet deep, the water is aerated by means of compressed air, from pipes set at intervals among the weirs.

In the 300,000-gallon sedimentation basin the water rests approximately three hours, after which it is drawn off to the filter beds, of which there are four, each 17 feet square, interior measurement. On the bottom of each is a bed of sand, 30 inches deep, resting on a stratum of sandstone gravel, 1 foot thick. One hundred and twenty-eight 2-inch pipes, arranged in parallel on the floor and extending the length of the tank, receive the clarified water through perforations and transmit it to a common collector pipe, from which it is passed, through a controller, to the clear water reservoir. The controller consists of a float, from which is suspended a plunger. For any designated head of water, to the level of which the float is adjusted, the float moves the plunger in a vertical plane, opening or closing ports through which water comes from the filters to the clear water reservoir. The capacity of the clear water tank is 200,000 gallons.

Water from this reservoir is forced by means of two electrically driven pumps, each of 1,400 gallons per minute capacity, into the 400,000-gallon standpipe at Gatun, from which it is distributed by gravity. The piping is arranged so that filtered water, exclusively, is used for domestic purposes and raw water from the reservoir is furnished for all plant and equipment use. The filtered water is supplied to approximately 10,000 people, in the villages of Gatun, New Gatun and Spillway. About 2,500,000 gallons may be filtered daily.

The building for the plant was constructed wholly of reinforced concrete, including the roof, which is a slab 4 inches thick and weighing about 50 pounds to the square foot. It is three stories high in the central part, with wings of one story. On the upper floor are storage rooms for resolvents; the middle is the operating floor, from which all machinery can be easily controlled; and on the ground floor are the filter beds, with the regulating devices. A bacteriological laboratory was constructed adjacent to the filter house, at a cost of $2,000. The filtration plant proper cost $38,000. It was designed and constructed by the Atlantic Division, the machinery, with the exception of rate-controllers and loss-of-head gages, having been fabricated in the States according to specifications and details furnished by the Division office.

December, 1911, Rainfall.

The rainfall during the past month was the lightest December rainfall of record at all stations in the Canal Zone except Ancon, Gamboa, and Colon, and at each of these stations it was the lightest with one exception.

The following table shows the rainfall for last month compared with the lightest December rainfall previously reported at the stations on the Isthmus having records covering a period of 10 years or longer:

STATION.	Rainfall, December, 1911.	Previous Lowest December Total.		Length of Record.
	Inches.	*Ins.*	*Year.*	*(Years)*
Ancon..........	1.99	.98	1879	*15
Balboa.........	1.36	2.80	1902	13
Culebra........	.31	.35	1900	21
Gamboa........	.97	.79	1900	29
Alhajuela.......	.39	1.14	1903	13
Bohio..........	1.34	2.88	1907	17
Colon..........	2.63	.94	1873	41

*Records have been kept intermittently at this station since 1879.

WEATHER CONDITIONS, CANAL ZONE, YEAR 1911.

The weather for the year 1911 as a whole was characterized by a general deficiency in rainfall, relative humidity, cloudiness and atmospheric pressure and an excess in temperature and wind movement.

The total rainfall during the year was below normal at all stations, being the lightest of record at Gamboa, Bohio, and a number of stations for which only a few years' records are available. The deficiencies ranged from 10 per cent at Balboa to 41 per cent at Bohio. The average fall over the Pacific Section was 67.21 inches and over the Central and Atlantic Sections 79.10 and 116.45 inches, respectively. The average number of rainy days was 172 in the Pacific Section, 214 in the Central and 265 in the Atlantic. Of the stations in the Zone, Balboa reported the least number of rainy days, 158, and Monte Lirio the greatest number, 304.

Average temperatures for the year were generally above normal. July was the warmest month at Ancon and Culebra and December at Colon.

The mean annual atmospheric pressure was the lowest that has been recorded in the Canal Zone during the past six years. March was the month of highest mean pressure and December the month of lowest pressure.

The weather conditions prevailing during the year were very favorable for excessive evaporation from water surfaces, the total amount recorded being the greatest of record at each station.

The subjoined table gives the distinctive climatological data for the year 1911:

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.	Date.		Total inches.	Annual average.	Days with .01 or more.	Aver. hourly movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date
Colon.	29.853	79.6	90	Sept. 12	71	Jan. 16	85	112.75	129.59	253	10.1	N.	34	N.E.	Dec. 29
Culebra ...	29.841	79.2	92	Apr. 29	65	Mar. 27	89	74.84	90.14	189	7.4	N.W.	38	N.E.	Aug. 18
Ancon	29.832	80.3	95	Oct. 16	65	Mar. 11	87	64.10	71.23	170	7.2	N.W.	38	S.E.	Oct. 3

NAMES OF CANAL FORTS.

Reservations to be Named in Honor of Grant, Amador, Sherman, Randolph, and De Lesseps.

The forts of the Panama Canal, and the batteries comprising them, will be named in accordance with the following schedule. The military reservations at the Pacific terminus will be named Fort Grant and Fort Amador, the first in honor of Gen. Ulysses S. Grant, U. S. A., President of the United States from 1869 to 1877, who died on July 23, 1885, and the second in honor of Dr. Manuel Amador Guerrero, first President of the Republic of Panama, who died on May 2, 1909. The reservations at the Atlantic terminus will be named Fort Sherman, Fort Randolph, and Fort DeLesseps, in honor of Gen. William T. Sherman, U. S. A., who died February 14, 1891, Maj. Gen. Wallace F. Randolph, U. S. A., who died September 9, 1910, and Count Ferdinand DeLesseps, promoter of the Panama Canal, who died December 7, 1894.

FORT GRANT MILITARY RESERVATION.

Battery Newton, in honor of Maj. Gen. John Newton, U. S. Volunteers (Brigadier General, Chief of Engineers, U. S. A.), who died May 1, 1895.

Battery Merritt, in honor of Maj. Gen. Wesley Merritt, U. S. A., who died December 3, 1910.

Battery Warren, in honor of Maj. Gen. Gouverneur K. Warren, U. S. Vols. (Lieutenant Colonel, Corps of Engineers, U. S. A.), who died August 8, 1882.

Battery Buell, in honor of Maj. Gen. Don Carlos Buell, U. S. Vols. (Colonel, Assistant Adjutant General, U. S. A.), who died November 19, 1898.

Battery Burnside, in honor of Maj. Gen. Ambrose E. Burnside, U. S. Vols. (First Lieutenant, Third U. S. Artillery), who died September 13, 1881.

Battery Parke, in honor of Maj. Gen. John G. Parke, U. S. Vols. (Colonel, Corps of Engineers, U. S. A.), who died December 16, 1900.

FORT AMADOR MILITARY RESERVATION.

Battery Smith, in honor of Maj. Gen. Charles F. Smith, U. S. Vols. (Colonel, Third U. S. Infantry), who died April 25, 1862.

FORT SHERMAN MILITARY RESERVATION.

Battery Howard, in honor of Maj. Gen. Oliver O. Howard, U. S. A., who died October 26, 1909.

Battery Stanley, in honor of Maj. Gen. David S. Stanley, U. S. Vols. (Brigadier General, U. S. A.), who died March 13, 1902.

Battery Mower, in honor of Maj. Gen. Joseph A. Mower, U. S. Vols. (Colonel, Twenty-fifth Infantry), who died January 6, 1870.

Battery Kilpatrick, in honor of Maj. Gen. Judson Kilpatrick, U. S. Vols. (Captain, First Artillery), who died December 2, 1881.

FORT RANDOLPH MILITARY RESERVATION.

Battery Tidball, in honor of Brig. Gen. John C. Tidball, U. S. A., who died May 15, 1906.

Battery Webb, in honor of Brevet Maj. Gen. Alexander S. Webb, U. S. A. (Lieutenant Colonel, 44th U. S. Infantry), who died February 12, 1911.

Battery Weed, in honor of Brig. Gen. Stephen H. Weed, U. S. Volunteers (Captain, 5th U. S. Artillery), who was killed in action, July 2, 1863, at Gettysburg, Pa.

FORT DE LESSEPS MILITARY RESERVATION.

Battery Morgan, in honor of Brig. Gen. Charles H. Morgan, U. S. Volunteers (Major, 4th Artillery), who died December 20, 1875.

SOCIAL LIFE OF THE ZONE.

Activities of Various Organizations.

The following officers were installed in the Isthmian Canal Rebekah Lodge No. 1, Gorgona, on Friday, January 12, the District Deputy Grand Sire and Suite officiating: N. G. , Janet Martin; V. G., Mary McCann; Recording Secretary, Alfred Edwell; Financial Secretary, Henry Lotz; Treasurer, Annie Calvit; Appointive Officers—R. S. N. G., Richard Stoddard; L. S. N. G., Florence Evans; War, Clara Clements; Con., Elizabeth Parks; R. S. V. G., Stephen Calvit; L. S. V. G., Martha W. Wyatt; Inner Guard, Marie Jansen; Outer Guard, Chas. H. Beetham; Chaplain, Elenor Babbitt. These officers will serve until June 30. Meetings of the lodge are held in the lodge hall at Gorgona on the second and fourth Friday evenings in each month.

The partition between the two rooms on the second floor of the school house at Culebra has been removed and the large room thus made will be used as a meeting place for Sunday schools and church congregations.

Knights of Pythias.

At the meeting of Ancon Lodge No. 8, Knights of Pythias, held January 2, 1912, the following officers were installed for the term commencing January 1, 1912: Past Chancellor, Fred A. Feld; Chancellor Commander, Walter J. Spaulding; Vice-Chancellor, Albert M. Colegrove; Prelate, Warner H. Clapp; Master of Work, George E. Rogers; Keeper of Records and Seal and Master of Finance, Stacey C. Russell; Master of Exchequer, E. Bruce McCormick; Master-at-Arms, Edmund C. Bunker; Inner Guard, Lewis A. Smith; Outer Guard, W. Wilkes Webb.

Independent Order of Red Men.

The Independent Order of Red Men, Cholo Tribe No. 5 of Gorgona, has postponed the date of its dance from January 13 to January 27, on account of the Red Cross reception to Miss Mabel T. Boardman on the former date.

International Brotherhood of Electrical Workers.

At the regular meeting of the International Brotherhood of Electrical Workers held at Gatun, Sunday, January 14, the following officers were installed for the ensuing year: President, W. S. Mitchel, reelected; Vice-President, J. W. Smith; Recording Secretary, C. J. MacNelley, reelected; Treasurer, A. Woolnough, reelected; Financial Secretary, A. E. Thourt; Foreman, F. J. Gerchow, reelected; First Inspector, J. I. Harris, reelected; Second Inspector, A. M. Horle.

National Guard.

All men interested in the formation of a provisional regiment on the Isthmus, similar to the National Guard in the United States, will greatly oblige the undersigned by writing, stating military service, if any, army or navy. It is hoped to secure a sufficient number of men to form at least one regiment of infantry, and one mounted troop.

JOHN ABRAMSON, Empire, C. Z.

Canal Zone Rifle Club.

At the regular annual meeting of the Canal Zone Rifle Club, held on Sunday, January 14, at Pedro Miguel, the following officers for the ensuing year were elected: President, F. W. Walraven; Vice-President, F. A. Gill; Secretary, G. C. Ferris; Treasurer, A. K. Evans; Executive Officer, W. L. Greene.

Any employe of the Isthmian Canal Commission desiring to join the club may secure particulars by writing to the Secretary, G. C. Ferris, Pedro Miguel.

Ancon Rifle and Revolver Club.

The Ancon Rifle and Revolver Association has opened a range at Sosa Hill where targets have been erected at 15, 25, 50, and 75 yard distances. A building has been erected and in front of it is a platform from which the marksmen shoot. The first match, to qualify, will be held next Sunday. The Association has joined the American Revolver Association, and the National Rifle Association.

Obituary.

Frank C. Grigsby of Starr, Ohio, an employe of the Commission at Las Cascadas, died on January 1. He was 46 years of age and had been on the Isthmus four years. He is survived by his wife living at Las Cascadas.

James Luther Horham, postmaster at Paraiso, died in Ancon Hospital on Monday, January 15. He was twenty-three years of age, single, and had been on the Isthmus a little over two years, coming here from Lincoln, Neb., where his mother lives. He had been at Paraiso since July 29, 1911; previous to that date he was located at Ancon, Balboa, and Pedro Miguel. Funeral services were held at St. Luke's Church, Ancon, Tuesday, at 4 p. m., Chaplain Brown officiating.

Notice to Mariners.

Material is being dumped along the axis of the Toro Point Breakwater at the Atlantic entrance to the Canal between the end of the trestle and the white can buoy which carries a light about 12 feet above sealevel. A maximum depth of 27 feet at mean tide is available over the shoal thus formed. The buoy referred to is moved outward from time to time as the construction of the breakwater progresses and it would be well for ships to keep entirely outside of the buoy at all times.

Missing Man.

Anyone having information regarding the whereabouts of Pedro Budinich, who was on the Isthmus during June or July of last year destined for Lima, Peru, and who is thought still to be on the Isthmus, is requested to communicate with Miss Dolores M. Hernandez, 638 Prospect Place, Brooklyn, N. Y.

PERSONAL.

Mr. C. M. Saville, who has been assistant engineer in charge of the Third Division of the Office of the Chief Engineer, has resigned from the Canal service to become chief engineer in charge of the construction of dams to impound river water for the supply of the city of Hartford, Conn.

Mr. S. B. Williamson sailed for the States on official business on January 9, on the *Colon*.

Mr. E. A. Drake is a passenger on the *Cristobal*, due to arrive at Cristobal on January 17.

Col. H. F. Hodges is a passenger on the *Allianca*, due to arrive at Cristobal on January 21.

Mr. F. H. Cooke, Civil Engineer, U. S. N., has been detailed to duty under the Isthmian Canal Commission in connection with the construction of the dry dock at Balboa and other terminal work. He arrived on the Isthmus on January 9.

OFFICIAL CIRCULARS.

Acting Division Engineer, Pacific Division.

CULEBRA, C. Z., January 8, 1912.

CIRCULAR No. 428:

Effective January 9, 1912, Mr. John M. G. Watt will act as Division Engineer, Pacific Division, during the absence of Mr. S. B. Williamson.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Ratings and Rates of Pay.

CULEBRA, C. Z., January 9, 1912.

CIRCULAR No. 299-Q:

A rate of 50 cents an hour is hereby authorized for coppersmiths, iron workers, linemen, moulders, plumbers, shipwrights, tinsmiths and wiremen.

The above positions are in addition to those authorized in Circular No. 299-N, of August 21, 1911.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Sale of Stationery and Office Supplies.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, Canal Zone, until 2.30 p. m., January 22, 1912, when they will be opened in the presence of attending bidders. These items can be seen and examined on any working day between the hours of seven to eleven a. m., and one to five p. m., and a list can be procured upon application to this office. Bids may be tendered for any quantity of items listed. The right is reserved to reject any or all bids, or any part of a bid. Bids must be plainly marked "Proposal to Purchase Office Supplies, to be opened January 22, 1912," and addressed to the undersigned.

C. NIXON, *Depot Quartermaster.*

Family Quarters.

Applications for married quarters were on file on January 1, as follows:

DISTRICT.	List No. 1.	List No. 2.
Ancon	8 (3)	53 (16)
Ancon Hospital	1	7 (2)
Balboa		30 (6)
Bas Obispo		28 (2)
Corozal	2 (1)	53 (9)
Cristobal		122 (3)
Culebra	1	43
Empire		78 (34)
Gatun		126 (40)
Gorgona		72 (25)
Las Cascadas		27
Pedro Miguel	2	41 (13)
Porto Bello		13 (11)
Toro Point	1	7 (3)
Totals	15 (4)	700 (164)

NOTE—The figures in parenthesis show the number of applicants already occupying regular or non-housekeeping family quarters at stations other than those at which applications are filed.

Misdirected Letters.

ANCON, C. Z., January 9, 1911.

The following insufficiently addressed letters originating in the United States and its possessions have been received at the office of the Director of Posts and may be secured upon request of the addressees:

Agnew, Jos. H.
Boyde, A. L.
Bronson, F. R.
Burwell, Wm. E.
Carlow, W. H.
Carmichael, W. L.
Case, Mrs. H. M.
Chadbourne, Paul H.
Clymer, E. H.
Conner, John
Crist, Clement H.
Croll, Harry
Crump, H. T.
Cullen, Charles P.
Dierkes, Miss Marie
Dilg, Louis J.
Duval, Wm. F.
Falkner, J. R.
Fosmaughe, Frank
Gabriel, George G.
Gilmore, John
Grier, Samuel, jr.
Halford, Capt. Frank
Hill, A. R.
Helmer, Mrs. Josephine L.
Hite, H. B.
Holleman, Marshall S.
Huff, Mrs. Amelia
Jackson, Chester
Jerry, Mrs. Carl R.
Lawler, Michael
Lewis, Robert
Lloyd, Miss H. W.
MacCulloch, Robert C.
McGowan, Mrs. A. J.
McLaughlin, Pat A.
McHenry, Mr.
Martinez, Alejandro
Michaels, Miss Helen
Mohrman, H.
Moore, Edward
Moyer, Robert E.
Owen, M. B.
Pagiavla, George
Perlee, Charles A.
Piper, W. T.
Reineck, Paul Sorg
Rehals, Steve
Richards, John Alex.
Smith, D. E.
Smith, Fred C.
Stevenson, Harold
Thorbourne, Mrs. Bessie
Thornton, Mrs. H. G.
Traisi, Giuseppe
Trotman, Julian
Vining, John D.
White, James
Wilber, Delbert H.
Zion, Samuel

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving picture entertainments for the week, January 22 to 27, inclusive, is as follows Monday, Culebra; Tuesday, Empire; Wednesday, Corozal; Thursday, Cristobal; Friday, Gatun; Saturday, Gorgona.

Friday evening, January 19, the clubhouses will hold a "Telephone" Athletic Meet. The various Y. M. C. A's., together with Camp Elliott, will enter a team, each to perform on its own floor. The first event will be run off promptly at 8 o'clock; the results from each floor telephoned to the Official Referee and Scorer, Mr. W. H. Warr, Empire. Mr. Warr will then compare results and notify the various teams along the line of the names of the winners of that event. A bulletin board will be kept in each clubhouse and the standing of teams will be posted immediately after each event. The best three men in each event will receive an appropriate ribbon souvenir and the winning team will receive a banner trophy. The order of events will be as follows: 15-yard dash; 12-pound shot put; Running high jump; Running broad jump; Three standing jumps; Eight-man relay race with poles 31 feet apart.

A Ferrand-Cecilian piano player has been purchased by the Division of Clubhouses from Captain Coleman, Adjutant of the 10th Infantry. It was used for the first time at Gorgona on Monday, January 8. There are 60 rolls of music, both popular and classical. The piano is to be used at Gorgona thirty days, after which it will be sent along the line to other clubhouses.

The Division of Clubhouses has been authorized to build an observation tower back of the Culebra clubhouse to connect with the porch of the clubhouse. The tower will be equipped with chairs, tables, etc., and will serve as a place for rest, refreshment and observation for residents and tourists.

CULEBRA.

The Duck Pin Bowling Tournament opened on Thursday evening with games between No. 2 and No. 1. The score of these and Friday's games follow:

Team.	1	2.	3.	Total.
No. 2	433	411	421	1,265
No. 1	397	389	406	1,192
Friday.				
No. 3	436	391	408	1,235
No. 4	446	432	436	1,314

High scores in duck pins for the week were made by: Coppin, 104; Driscoll, 100; Mengel, 111, 100; Coneeley, 103, 102; Fay, 106.

A smoker will be given on Thursday evening. All members and non-members are invited.

EMPIRE.

The following high scores were bowled on the alleys during the past week; Duck pins—Myers, 109; L. Giavolli, 109, 106, 100, 103, 118, 110, 112, 104; Pinney, 102, 111, 109, 102, 103; Dakin, 107, 106, 103; Goolsby, 103, 119; Grund, 101; Nelson, 104, 115; Gustaveson, 105.

The local tournament in duck and candle pins which started on Monday, January 15, has 24 entries. Each man is to bowl each of the others in both duck and candle pins. The prizes will be gold and silver medals.

At the present time the following tournaments are in progress: Bowling 24 entries, pool 24 entries, billiards 18 entries, chess 12 entries.

On Saturday, January 20, there will be an exhibition pool game by DePoorter and Hughes of Gatun, and Pearson and Hursh of Empire.

On Friday, January 26, a smoker will be given to the men of Empire. A special program is being prepared by local and out of town talent.

GORGONA.

Gorgona has 16 entries for the telephone meet to be held on Friday, January 19. At a meeting of the contestants last week they elected Messrs. A. M. Johnson and E. M. Louden as captains of two teams. The teams will be selected from the 16 entrants, and pitted against each other on the local floor to make the competition more keen.

Mrs. Murray and Mr. Gardiner furnished special music at the Camp Elliott Y. M. C. A. on Sunday night, January 14.

Messrs. Kuentz, Booz, and Hopkins furnished special music at the sunset singing service on Sunday night, January 14. Mrs. Hackenburg and Mrs. Onken sang a duet. These services are of a popular nature and everyone is welcome to attend.

The following films will be shown on Friday night at the moving picture show: A Carnival of Japanese Firemen at Tokyo; Tatalan, the Minstrel—tragic; The Cowboy's Innocence—thrilling; Will it ever come to this?—comic; A Queen for a Day—Spanish; Priscilla and the Pequot Indians—pathetic. Members admitted free, non-members 25 cents, children 15 cents.

Fifteen new books have been ordered and will be added to the library as soon as they arrive from the States. The numbering system is being revised by the librarian and will be completed in a few days.

GATUN.

The Gatun Executive Council held a special meeting on Tuesday evening, January 9. Dan St. Clair presided. Other councilmen present were Messrs. Windes, Gamble, Gayer, Shuck, and Secretary Smith. It has been decided that in the future the practice of having one's name placed on the barber shop list by telephone and the signing of one member's name on the list by another member be discontinued.

On Wednesday evening, January 17, the last lesson of the ten-lesson course in Spanish will have ended. The classes have been so successful that it has been decided to organize two more classes, one of which will take an advanced course and the other a course for beginners. Prof. Jos. Gomez will have charge. The tuition will be $2.50 for ten lessons, payable in advance. The new classes will begin on Wednesday evening, January 24.

Two new subscriptions have been added to the magazine list, the *Army and Navy Journal* and the *Official Railway Guide*. Nine new library books and ten new phonograph records were also added to the clubhouse equipment during the past week.

The game of candle pins was introduced on the Gatun alleys during the past week.

A new green tapestry curtain, ballaho, flies, drops, and wings have been ordered for the clubhouse stage.

The Spanish classes for women include the following: Class No. 1—Mrs. W. J. Allen, Mrs. F. S. Permenter, Mrs. M. R. Steele, Miss Florence Neville. Class No. 2—Miss Cora Sessions, Miss Mary Sibert, Miss Catherine Harding, Miss Josephine Reid, Miss Lucile Duckworth.

Sanitary paper towels are now used exclusively in the clubhouse.

The "School Boys" defeated the "Working Boys" in a game of basket ball on Friday evening, January 12. Score, 13 to 11.

A quartet has been organized with Coleman, 1st tenor; Langston, 2nd tenor; Smith, baritone; Dewey, bass.

The match games of pool on Friday night, between DePoorter, champion of the Isthmus and Hughes, winner of the recent pool tournament, was won by DePoorter, who gave Hughes a handicap of 40 balls. The score was DePoorter, 150; Hughes, 79.

A new Victrola talking machine will be purchased this week for the Gatun clubhouse.

The Discussion Club met on Sunday evening, January 14, with the Secretary as leader. The subject was "Vices of the Isthmus and Counteracting Agencies." Those who spoke were Foman, Bartlett, Porter, Winters, Purdy, McCollum, W. P. Smith.

CRISTOBAL.

There was an attendance of 33 at the Spanish class on Monday evening, January 8. This session was a free demonstration of the system used by Senor J. Gomez, the instructor. The regular sessions will be each Monday night hereafter for ten consecutive weeks.

There were 41 who attended the meeting of the Debating Club on Wednesday night, January 10. The subject discussed was "Resolved that the awakening of the Yellow Race is inimical to the social, political, and economic welfare of the White Race." The affirmative secured the decision. The next session of the club will be held on Wednesday evening, January 24. The programme will consist of a paper presented by J. H. Lloyd, of the McClintic-Marshall Co., on the development and progress of the Navy for the past 100 years. After the reading of the paper a general discussion will take place.

A chess tournament will be started in the near future. All desiring to enter should leave their names at the office.

On last Thursday night, eleven local bowlers organized an individual candle pin tournament. Entries were paid in and games rolled the same evening with the following results: Gold medal—Bullard, 94, 88, 101, total 283; Silver medal—Barrett 92, 89, 95, total 276; Bronze medal—Jacques 82, 89, 97, total 268; the following men finished in the order named: Collins, 98, 80, 86, total 264; Cotton, 78, 94, 79, total 251; Beck, 71, 102, 76, total 249; Weston, 78, 97, 73, total 248; Orr, 79, 77, 74, total 230; Russell, 78, 82, 61, total 221; Amo, 71, 78, 67, total 216; Greene, 78, 74, 64, total 216; Beck won a silver medal for the highest single string score.

The following high scores were made on the local alleys during the week ending January 13:

Candle pins—Barrett, 101, 103, 106; Orr, 103; Beck, 102; Bullard, 101, 102; Barte, 102; Louch, 100; Claherty, 110.

Duck pins—Barte, 104, 107, 103, 110, 102, 113, 108, 104, 103, 101, 103, 101; Barrett, 108, 104; Smith, 105; Carpenter, 103; Bullard, 107, 107; Hess, 109.

Ten pins—Beattie, 203.

BASEBALL.

PANAMA CANAL LEAGUE.

Result of Games, January 14

At Colon—Com. Sub. 6; Empire 2.
At Ancon—Ancon 11; 10th Infantry 1.

STANDING OF CLUBS.

	P.	W.	L.	P.C.		P.	W.	L.	P.C.
Com. Sub.	3	3	0	1.000	Empire	3	1	2	.333
Ancon	4	3	1	.750	10th In'ty.	4	0	4	.000

SCHEDULE FOR JANUARY 21.

At Empire—Empire vs. Ancon
At Colon—Com.-Sub. vs. 10th Infantry.

GAME AT COLON, JANUARY 14.

C.-S.	AB.	H.	PO.	A.	E.	Empire.	AB.	H.	PO.	A.	E.
Buchan'n, cf	2	2	1	0	0	Bryan, 3b	4	2	0	2	3
Curtis, 2b	2	0	1	2	1	VanZ'ndt, lf	3	1	1	0	0
Kellogg, 1b.	1	0	15	0	0	Maguire, 1b	3	0	10	0	0
Mosher, ss.	3	1	2	1	0	Markley, ss	4	1	4	5	0
Sulli'n, W, lf	3	1	2	1	0	Hepler, 2b	4	0	2	2	2
Herring, 3b	4	2	3	1	1	Murphy, cf.	4	1	2	0	0
Drennan, rf	3	1	1	0	2	Daugh'ty, rf	3	0	0	0	0
Beard, c.	4	1	2	0	1	Cushing, c.	3	0	4	2	1
Davis, p.	4	1	0	7	0	Marshall, p.	3	0	1	4	0
Totals	26	9	27	12	5	Totals	31	5	24	15	6

Com.-Sub	0	1	0	0	0	3	1	1	x	—6
Empire	0	0	0	0	0	0	0	0	2	—2

Runs—C.-S.: Buchanan, Kellogg, Mosher, Sullivan, Herring, Drennan; Empire: Bryan, Van Zandt. Earned runs—Com.-Sub. 1. Two base hits—Van Zandt. Home huns—Mosher. Sacrifice hits—Buchanan, Curtis (2), Kellogg, Mosher. Stolen bases—Buchanan, Herring, Marshall. First base on errors—Com.-Sub. 3, Empire 3. Base on balls—Off Davis 2, off Marshall 3. Struck out—By Davis 2, by Marshall 3. Hit by pitcher—by Marshall 2 (Buchanan and Kellogg) Left on bases—Com.-Sub. 6, Empire 4. Double plays—Sullivan to Kellogg, Bryan to Markley to Maguire, Markley to Hepler to Maguire, Kellogg (unassisted). Time of game—2.00. Scorer—Bullard. Umpire—Irwin.

GAME AT ANCON, JANUARY 14.

Ancon.	AB.	H.	PO.	A.	E.	10th Inf.	AB.	H.	PO.	A.	E.
Edwards, lf.	6	2	3	0	0	Deleh'ty, 1b	3	0	10	2	0
Lindberg, rf	5	1	2	0	0	Webber, 2b.	4	0	3	4	3
Drennan, cf	4	2	0	0	0	Smith, W, ss	4	1	1	1	1
Smith, R, 2b	5	1	4	5	0	Trickey, c.	4	1	6	1	0
Potter, ss.	4	0	2	2	0	VanOtt'n, p	3	0	0	4	0
Pearman, 3b	5	1	2	1	2	Lucas, rf.	3	0	1	1	0
Guptil, 1b.	5	3	7	2	0	Alley, cf.	3	0	2	0	0
Hodnot, c.	5	1	6	0	0	Brennan, lf.	1	0	0	0	1
Murray, p.	3	2	1	1	0	Cassidy, 3b.	3	1	1	0	1
						Laugner, lf	2	0	1	0	0
Totals	42	13	27	11	2	Totals	30	3	24	13	6

Infantry	1	0	0	0	0	0	0	0	0	— 1
Ancon	0	0	2	1	4	1	1	2	x	—11

Runs—Ancon: Lindberg, (2), Drennan, Smith, R, Potter, Guptil, Hodnot (2), Murray (3); Infantry: Smith, W. Earned runs—Ancon 4. Two base hits—Trickey, Cassidy, Lindberg. Home runs—R. M. Smith Sacrifice hits—Lindberg, Potter. Wild pitch—Murray. Stolen bases—W. A. Smith, Edwards, Drennan (2), Guptil (2). First base on errors—Ancon 5, Infantry 2. Base on balls—Off Van Ottman 2. Struck out—By Murray 6, by Van Ottman 3. Hit by pitcher—By Murray 1, (Delehanty), by Van Ottman 1 (Drennan). Left on bases—Ancon 10, Infantry 3. Double plays—Smith to Potter to Guptil. Umpire—Foster. Time of game—1.55. Scorer—Hoffman.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Gatun, C. Z., Sunday, January 21, 1912, at 5.00 p. m. The program follows:

1. March—*Grand Opera* .... Missud
2. Selection—*The Golden Girl* (by request) .. Howard
3. Waltz—*Farewell to Munich* .... Gung'l
4. Overture—*Poet and Peasant* .... Suppe
5. (*a*) Two Step—*Alexander's Ragtime Band* .... Berlin
   (*b*) —*That Mysterious Rag* .... Snyder
6. *Excerpts from Faust* .... Gounod
7. *Intermezzo Elegante from Tales of Hoffman* .... Offenbach
8. *The Only Tune the Band Could Play was Auld Lang Syne* .... Hayes

   A Legend: Once there was a band which had but one tune in its repertoire. Wherever this band played it made this tune serve all purposes. The above number is an illustration of the different ways in which this band rendered this old song.
9. Medley Selection—*Summer Days* .... Recker
10. March—*Whistling John* .... Ascher

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Empire, C. Z., January 28, at 6 p. m.

Married.

WOLF-EGGLESTON—At the Y. M. C. A., Cristobal, on January 10, 1912, Helen Amelia Eggelston, of Panama, New York, to Charles Augustus Wolf of Gatun, the Rev. Carl H. Elliott officiating.

BYRNE-COCHEZ—On January 12, at St. Ferdinand's Church, Empire, by the Rev. Father Allot, Lydia Bertha, daughter of Mr. and Mrs. Theophilus Cochez, to Michael J. Byrnes. Canal Zone residence, Empire.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning January 12, 1912.

FRESH MEATS.

	Price.
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	16
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24

MISCELLANEOUS.

Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Veal, per pound	1.20
Beef, per pound	25
Eggs, fresh, dozen	42
one-half dozen only	22
Bluefish, fresh, per pound	14
Halibut, fresh, per pound	15
Oysters, 1 qt. kegs, per keg	50

POULTRY AND GAME.

Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each 60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.00
Hens, milk fed, for roasting, about 3 pounds, each	*50
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	25
Squabs, each	35
Capons, each	2.10
Grouse, each	50

CURED AND PICKLED MEATS.

Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30

DAIRY PRODUCTS.

	Price.
Butter—Creamery special, per pound	45
Cheese—Roquefort, per pound	45
Philadelphia cream, cake	10
Young America, per pound	20
Swiss, per pound	26
Edam, each	1.00
Parmesan, lb	§35
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**20
Buttermilk, bottle	**15
Fer-mil-lac, bottle	**20
Ice cream, quart	‡25
½-gallon	‡50

VEGETABLES AND FRUITS.

Beets, per pound	3
Celery, per head	10
Cabbage, per pound	4
Cucumbers, per pound	12
Carrots, per pound	4
Lettuce, per pound	*14
Onions, per pound	3½
Potatoes, white, per pound	3½
sweet, per pound	2
Parsnips, per pound	4
Squash, per pound	3
Turnips, per pound	3
Yams, per pound	3
Apples, per pound	5
Cranberries, per pound	*5
Grapes, per pound	†12
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12
Pears, per pound	*5

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery

§Sold only from cold storage and not from commissaries.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending January 24, 1912. (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
January 18	......	3.06	9.21	3.44	9.45
January 19	......	3.46	10.00	4.16	10.21
January 20	......	4.21	10.36	4.48	10.58
January 21	......	4.54	11.11	5.17	11.30
January 22	......	5.26	11.46	5.50	......
			P.M.		
January 23	12.05	6.00	12.20	6.23	......
January 24	12.41	6.34	12.54	6.58	......

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Sauturday, January 13. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.*
Sun., Jan. 7	125.6	92.0	44.6	14.5	14.4
Mon., Jan. 8	125.6	92.0	44.6	14.6	14.6
Tues., Jan. 9	125.6	92.0	44.6	14.7	14.7
Wed., Jan. 10	125.5	91.9	44.6	15.0	15.0
Thurs., Jan. 11	125.5	91.9	44.6	15.2	15.2
Fri., Jan. 12	125.5	91.9	44.6	15.4	15.4
Sat., Jan. 13	125.4	91.8	44.5	15.5	15.5
Height of low water to the nearest foot	125.0	92.0	44.0		

*Spillway closed from January 9, at 3 p. m., until January 13, at noon.

Contracts for Clearing Trails.

The bids will be received by the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2:30 p. m., Friday, January 19, 1912, at which time they will be opened in public, for the clearing of the following trails: Cruces-Gamboa and Mount Hope-Majagual. Work shall be done in accordance with specifications to be obtained upon application to the Superintendent of Public Works, Isthmian Canal Commission, Administration Building, Panama. Proposals may be made for clearing each trail separately, or for both. Successful bidders will be required to furnish a bond or make a cash deposit in the sum of ten per cent of the amount bid as a guarantee that the work will be carried out. Proposals should be enclosed in a sealed envelop, marked "Proposal for Clearing Canal Zone Trails," and addressed to the undersigned. The Commission reserves the right to reject any and all bids, or accept any bid, as may be deemed to its interest, and to waive defects and informalities in proposals.

C. NIXON.
Purchasing Agent on the Isthmus.

The following ships arrived at, or departed from, the port of Balboa during the week ending January 13:

Arrivals—January 7, *Quito*, from Guayaquil; January 8, *Mantaro*, from Callao; January 8, *Guatemala*, from Callao; January 10, *City of Panama*, from San Francisco; January 10, *Tampico*, from San Francisco. Departures—January 8, *Pachitea*, to Callao; January 9, *Chile*, to Guayaquil; January 10, *City of Para*, to San Francisco; January 11, *Limari*, to Valparaiso; January 13, *Pleiades*, to San Francisco; January 13, *Mantaro*, to Callao.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Allianca	P. R. R.	Monday	Jan.	15
Colon	P. R. R.	Monday	Jan.	22
Advance	P. R. R.	Saturday	Jan.	27
Panama	P. R. R.	Saturday	Feb.	3
Allianca	P. R. R.	Friday	Feb.	9
Colon	P. R. R.	Friday	Feb.	16
Advance	P. R. R.	Friday	Feb.	23
Panama	P. R. R.	Thursday	Feb.	29
Allianca	P. R. R.	Wednesday	Mar.	6
Colon	P. R. R.	Wednesday	Mar.	13
Advance	P. R. R.	Tuesday	Mar.	19
Panama	P. R. R.	Tuesday	Mar.	26

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Sunday	Jan.	21
Allianca	P. R. R.	Sunday	Jan.	28
Colon	P. R. R.	Saturday	Feb.	3
Advance	P. R. R.	Friday	Feb.	9
Panama	P. R. R.	Friday	Feb.	16
Allianca	P. R. R.	Thursday	Feb.	22
Colon	P. R. R.	Thursday	Feb.	29
Advance	P. R. R.	Wednesday	Mar.	6
Panama	P. R. R.	Wednesday	Mar.	13
Allianca	P. R. R.	Tuesday	Mar.	19
Colon	P. R. R.	Tuesday	Mar.	26
Advance	P. R. R.	Monday	Apr.	1
Panama	P. R. R.	Sunday	Apr.	7

NEW YORK TO COLON.

Zacapa	U. F. C.	Wednesday	Jan.	10
Prinz Eitel Friedrich	H.-A.	Saturday	Jan.	13
Sixaola	U. F. C.	Saturday	Jan.	13
Almirante	U. F. C.	Wednesday	Jan.	17
Prinz Sigismund	H.-A.	Saturday	Jan.	20
Carrillo	U. F. C.	Saturday	Jan.	20
Trent	R. M.	Saturday	Jan.	20
Santa Marta	U. F. C.	Wednesday	Jan.	24
Bluecher	H.-A.	Thursday	Jan.	25
Prinz August Wilhelm	H.-A.	Saturday	Jan.	27
Turrialba	U. F. C.	Saturday	Jan	27
Metapan	U. F. C.	Wednesday	Jan.	31
Altai	H.-A.	Friday	Feb.	2
Tivives	U. F. C.	Saturday	Feb.	3
Sibiria	H.-A.	Saturday	Feb.	3
Tagus	R. M.	Saturday	Feb.	3
Zacapa	U. F. C.	Wednesday	Feb.	7
Prinz Joachim	H.-A.	Saturday	Feb.	10
Oruba	R. M.	Saturday	Feb.	17

COLON TO NEW YORK.

Metapan	U. F. C.	Thursday	Jan.	18
Sibiria	H.-A.	Saturday	Jan.	20
Tivives	U. F. C.	Tuesday	Jan.	23
Arcadian	R. M.	Tuesday	Jan.	23
Zacapa	U. F. C.	Thursday	Jan.	25
Prinz Eitel Friedrich	H.-A.	Tuesday	Jan.	30
Sixaola	U. F. C.	Tuesday	Jan.	30
Almirante	U. F. C.	Thursday	Feb.	1
Prinz Sigismund	H.-A.	Saturday	Feb.	3
Carrillo	U. F. C.	Tuesday	Feb.	6
Oruba	R. M.	Tuesday	Feb.	6
Santa Marta	U. F. C.	Thursday	Feb.	8
Prinz August Wilhelm	H.-A.	Tuesday	Feb.	13
Orotava	R. M.	Tuesday	Feb.	20

NEW ORLEANS TO COLON.

Atenas	U. F. C.	Saturday	Jan.	13
Parismina	U. F. C.	Saturday	Jan.	20
Abangarez	U. F. C.	Saturday	Jan.	27
Atenas	U. F. C.	Saturday	Feb.	3
Parismina	U. F. C.	Saturday	Feb.	10
Abangarez	U. F. C.	Saturday	Feb.	17

COLON TO NEW ORLEANS

Abangarez	U. F. C.	Thursday	Jan.	18
Atenas	U. F. C.	Thursday	Jan.	25
Parismina	U. F. C.	Thursday	Feb.	1
Abangarez	U. F. C.	Thursday	Feb.	8
Atenas	U. F. C.	Thursday	Feb.	15
Parismina	U. F. C.	Thursday	Feb.	22

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages. The *Altai* cabins are all sold at second cabin rates.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a.m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; ships for New York via Kingston on Tuesdays at 1.30 p. m., and Thursdays at 11 a. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JANUARY 24, 1912. No. 22.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of December is published in full in other columns of this issue of The Canal Record. It gives a detailed account of the progress of the Canal Work in all departments and divisions.

Laying Spillway Dam at Gatun.

In the work of filling the interstices between the present piers and constructing the ogee of the Spillway Dam at Gatun, which was outlined in The Canal Record of December 20, 1911, delay was being caused by difficulties encountered in making watertight the sheet-piling cofferdam across the 40-foot space at the toe of the ogee. To accomplish the same end more expeditiously, the apertures which had not already been closed with heavy timber gates were stopped temporarily, cutting off the spillway flow entirely and allowing the whole pit to be pumped out. A concrete section of the ogee, about 10 feet long, was built across the 40-foot space near the cofferdam as originally intended and the backwater cofferdam, 4 feet high, was extended to same, thus enclosing two-thirds of the foundation and permitting flow across the remaining section. The spillway was closed nearly four days during which the surface of Gatun Lake rose .2 foot per day. Its maximum height from this cause, 15.5 feet, was attained at noon on Saturday, January 13. The four apertures at the west side were opened that afternoon.

Since that time the portion of the pit to the east of the bulkhead, comprising the base for about two-thirds of the dam yet to be constructed, has been cleared of silt and debris by means of a grab bucket operated from a stiff-legged derrick resting on one of the piers. The soil was dumped along the outer side of the bulkhead. Concrete has been placed in 5 interstices to the full height of the piers, and all of those remaining, except the four open at the west side, will be closed to full height in the present operations. Across a section about 15 feet in length, the pit has been filled with cyclopean concrete and the ogee hasbeen constructed to half of its height. Forms are being erected for the remaining sections, which will be completed one at a time.

Concrete is furnished in 4-cubic yard, narrow-gage dump cars from the Spillway plant and dumped directly from a trestle extending over the piers from the end of the operating tunnel on the east side. From the trestle the concrete is dumped directly into the spaces between the piers or into a wide-mouthed chute which carries it to the pit and ogee. So far, 5,000 cubic yards will have been placed in this work, which was begun during the last week in December. The portion of the ogee now under construction will be brought to full height (50 feet above sealevel) and the four apertures at the west side will then be closed in order that the rest of the dam may be finished. It is estimated that the apertures are capable of discharging without serious rise, a freshet as large as any recorded in the dry season during the American operation.

Change in Weather Stations.

On account of the impending rise of Gatun Lake, the rainfall and river stations have been removed from Tabernilla San Pablo, and Bohio. The apparatus from San Pablo, consisting of automatic rain gauge and register, has been transferred to New Frijoles, bordering the projected surface of Gatun Lake on the relocated line of the Panama railroad. It is planned to establish other rainfall stations along the line of the relocated Panama railroad later on when permanent settlements have been established.

The fluviograph at Bohio, which was erected by the French and at which records of heights of the Chagres have been taken since 1890, will continue in use for the present. The Bohio rainfall station was established by the French in 1894 and those at San Pablo and Tabernilla were established by the Americans in 1907.

West Dam at Miraflores.

Following the completion of the hydraulic fill for the core of the west dam at Miraflores, the placing of dry spoil was augmented by 23,750 cubic yards of earth and rock during the month of December. When the hydraulic fill was finished its surface lay approximately level at 59 feet above sealevel; under the stress of heavy material, dumped along the edges and sinking in the silt, the core is being forced upward on each side in a wave-like formation, about six feet wide and with the crest about four feet above the level of the center, as yet undisturbed. The materials are thus being mixed, so that the impervious core of silt will be reinforced by the bowlders lodged within it, after the nature of cyclopean concrete. To made the hydraulic fill, 661,048 cubic yards of material were supplied from the monitors excavating in and below the site for Miraflores Locks. A total of 1,070,377 cubic yards of dry fill had been made up to January 1, 1912, leaving 415,678 cubic yards to be placed. As part of the dam construction, the plans call for the excavation of 10,000 cubic yards, to make room for the concrete core walls by which the dam will be connected with the locks.

Sample Fender Chain.

A chain to be used with the fender machine, as one of the safety devices at the locks, has been ordered from the Navy Department, and will probably be manufactured at the Boston Navy Yard. It will be 428 feet long, of the best three inch iron, and a triplet of it must be tested to stand a minimum breaking strain of 262 tons.

Gate Construction at Gatun.

The erection of the guard and upper main gates for both chambers of the upper lock at Gatun having been completed, the contractors are engaged in moving the construction bridges to the site of the intermediate gates of the locks. In the west chamber the bridge has been moved and re-erected and by the end of the week the east chamber bridge will be similarly placed. At the upper gates some riveting remains to be done, but for this a small force can work from adjustable scaffolds, keeping pace with the erection of skeletons and placing of sheathing, which are regarded as the features of paramount importance.

Lower Wing Walls at Pedro Miguel Lock.

The southeast wing wall at Pedro Miguel Lock, flaring outward at an angle of thirty degrees from the axis of the east side wall at its southern extremity and extending to the hill east of the lock site, is about one-half completed. It will require in all about 3,000 cubic yards of concrete and it is estimated that the portion necessary to complete it can be laid within a month. A part of the material was supplied by a stationary 2-cubic yard mixer, placed near the lower end of the east side wall and used in connection with narrow-gage railroad running to chamber cranes and derricks, but since the removal of this plant, to be repaired and transferred to Miraflores Locks, concrete for the wall has been furnished by two ½-cubic yard portable mixers. Upon the completion of the southeast wing wall the work will be continued on the corresponding wall on the west side. Operations were temporarily discontinued there 3 months ago, after the foundation and about 45 per cent of the wall had been laid. Each of these wing walls is to be 240 feet long, by 55 feet high, and resting on a base slab, 28 feet 9 inches wide and 4 feet thick, with its lower edge at elevation +12. On the front will be a toe, battering 1 on 3 to a point 11 feet above the base, from which point to the top of the wall the face will be vertical. The slab forming the base of the wall will be narrowed by three-inch steps

NOTES OF PROGRESS.

(Continued.)

every 10 feet, vertically, until the width of the top will be 14 inches. This slab is braced by heavily reinforced counterforts which are 30 inches wide and spaced 15 feet on centers. Rack and return tracks for the towing locomotives will be laid on top, extending to the lower end of the wall.

The lower center guide wall, of which 950 feet are completed, will not be extended to its full length of 1,200 feet until after the completion of the west dam at the upper end of the lock. The site of the wall is crossed by the tracks over which spoil is hauled for building the dam and for completing the west backfill.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 76 per cent completed, 171,305 cubic yards, out of a total of 225,000, having been placed at the close of work on January 20. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Rock.	Hours worked	No. Mixers.
January 15....	360	22	15.30	2
January 16....	264	18	13.30	2
January 17....	350	16	11.00	2
January 18....	296	....	12.30	2
January 19....	436	30	16.00	2
January 20....	412	13	15.00	2
Total.......	2,118	99	83.30	2
Aggregate...	2,217			
Previously reported.....	169,088			
Grand total..	171,305			

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending January 20, follows:

Date.	Hours worked.	Cubic Yards.
January 15..........................	2.55	1,526
January 16..........................	4.48	2,279
January 17..........................	2.54	1,448
January 18..........................	3.53	1,951
January 19..........................	3.48	2,046
January 20..........................	4.02	2,009
Total..........................	22.20	11,259

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending January 20, follows:

Date.	Hours worked.	Cubic Yards.
January 15....................	8.05	2,927
January 16....................	7.45	3,240
January 17....................	5.00	2,294
January 18....................	4.55	1,832
January 19....................	7.15	2,615
January 20....................	7.45	2,892
Total....................	40.15	15,800

Society of the Chagres Dinner.

The first dinner of the Society of the Chagres (six year men on the canal and railroad work), was held at the Hotel Tivoli in Ancon on January 20. There were present 196 of the 275 members, of whom 90 per cent are living on the Isthmus. Mr. Edward J. Williams was the toastmaster and toasts were responded to as follows: "The Objects of the Society," Mr. John K. Baxter; "Sanitary Conditions as We Found Them in 1904," Col. W. C. Gorgas; "An Honest Job," Chief Justice H. A. Gudger; "The Construction of the Canal, A School of Citizenship," Col. Tom. M. Cooke; "After the Canal," Capt. R. E. Wood; "Pioneer Comforts," Mr. John Burke; "The Real Reason We Are Here," Mr. J. J. Meehan.

Personal.

Lieut.-Gen. Sir Robert Baden-Powell arrived at Colon from Southampton on the *Arcadian* on January 21, and left for New York on January 23. He was met at the dock in Colon by a deputation of 25 of the Canal Zone Boy Scouts and, in response to their greetings, he made a brief speech. In the United States he will make a tour of the country in the interest of the Boy Scout movement, making addresses in 21 cities.

CONCRETE WORK IN THE LOCKS.

Over 76 per cent of the concrete for the locks is in place, the amount at the close of work on January 20, being 3,216,740½ cubic yards, out of a total of approximately 4,199,400. A total of 23,315 cubic yards of concrete was laid in the locks during the week ending January 20.

GATUN LOCKS.

Over 89 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on January 20, being 1,790,323½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending January 20, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
January 15........................	724	12.01	3	256	3.40	2	....	1,051
January 16........................	958	16.40	5	278	4.40	2	....	1,314
January 17........................	1,408	24.03	7	228	3.00	2	....	1,707
January 18........................	1,468	24.51	5	104	2.40	2	....	1,658
January 19........................	1,436	23.03	5	152	2.40	2	....	1,642
January 20........................	1,182	29.42	5	202	2.40	2	....	1,435
*Portable mixers................	....	....	......	411	....	......	....	....
Total........................	7,176	130.20	5	1,631	19.20	2	....	8,807
Previously reported........................	....	....	......	....	....	......	....	1,781,516½
Grand total........................	....	....	......	....	....	......	....	1,790,323½

*The 411 yards shown for the portable mixers are reinforced concrete, and were placed on the following days: January 15th, 71; January 16th, 78; January 17th, 71; January 18th, 86; January 19th, 54; January 20th, 51.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 95 per cent completed, 799,651 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on January 20. The record for each of the six 8-hour working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
January 15........................	254	7.50	2	112	9.50	3	....	366
January 16........................	440	13.00	2	80	7.00	1	....	520
January 17........................	468	15.00	2	118	11.50	2	....	586
January 18........................	398	12.00	2	64	11.00	2	....	462
January 19........................	394	12.00	2	48	12.75	2	....	442
January 20........................	444	13.00	2	145	15.00	2	....	589
Total........................	2,398	72.50	2	567	66.75	2	....	2,965
Previously reported........................	....	....	......	....	....	......	4,423	796,686
Grand total........................	....	....	......	....	....	......	4,423	799,651

MIRAFLORES LOCKS.

Over 46 per cent of the concrete for the system of two twin locks at Miraflores was in place on January 20, the total amount on that date being 627,046 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.	*Cu. Yds.*								*Cu. Yds.*	*Cu. Yds.*
Jan. 15....	1,628	37.33	7	358	5.25	2	249	18.50	3	....	2,235
Jan. 16....	1,324	38.00	7	408	5.75	2	149	7.00	1	....	1,881
Jan. 17....	1,268	27.00	5	270	4.47	2	241	14.00	2	....	1,779
Jan. 18....	1,256	31.67	5	30	.75	1	247	15.00	2	....	1,533
Jan. 19....	1,910	40.00	7	34	.50	2	254	15.50	3	....	2,198
Jan. 20....	1,676	38.17	7	....	....	......	241	18.50	3	....	1,917
Total...	9,062	212.17	6.33	1,100	16.75	1.5	1,381	88.50	2.33	....	11,543
Previously reported..	....	....	......	....	....	......	....	....	......	3,693	615,503
Grand total.....	....	....	......	....	....	......	....	....	......	3,693	627,046

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The business meeting of the Canal Zone Federation of Women's Clubs will be called to order in the Commission clubhouse, Cristobal on Saturday morning, January 27, at 9 o'clock. The nominating committee, the credentials committee and all other committees that have business to transact before the meeting are expected to convene immediately upon the arrival of the train from Panama. The afternoon session will be held at 2.30 o'clock. Lunch will be taken by the delegates and club women, as usual, at the Commission hotel at the regular rate. All reports are to be presented in writing.

The Cristobal Woman's Club held a reception for Miss Mabel T. Boardman at the clubhouse on Wednesday afternoon, January 17. There were about sixty club members and guests present. Miss Boardmann responded to a request and spoke on the organization and work of the American National Red Cross. The meetings of the Cristobal club in February will be as follows: On February 7, general meeting, when Mr. Harry Sawtelle will speak under the education department; February 14, the home department, program on House Furnishings and Decorations; February 21, under the art and literature department, An Afternoon with Grieg; February 28, meeting of the Executive Board in the clubhouse at 9 a. m.

The Empire Woman's Club met in the clubhouse on Thursday, January 18, when there was a program consisting of papers on China. The club is increasing in membership and the attendance was good.

At the meeting of the Paraiso Woman's Club on Wednesday, January 17, Miss Alexander delivered an address on Primary Education. Mrs. Harry Bain presided in the absence of the president.

A concert for the benefit of the Colon Humane Society was held in the Municipal Building, Colon, on Monday evening, January 15. Mr. Geo. Arnold, professor of music of the Brussels Conservatory, played violin selections, and Signor Arturo Pazzagi sang. Miss Dorothy Layland was the accompanist. The receipts were $170.

On Friday evening, January 12, a subscription concert was given at Colon Hospital by the hospital staff for themselves and their friends. Mr. Arnold and Miss Layland played.

I. O. O. F., Installation of Officers.

At the regular meering of the Isthmian Canal Lodge No. 1, I. O. O. F., held in the Commission lodge rooms at Gorgona on January 16, District Deputy Grand Sire B. F. Sisson of Gatun installed the following officers for the ensuing term: Past Grand, H. L. Greeley; Noble Grand, A. A. Hunter; Vice Grand, L. A. Taber; Secretary, R. A. Schofield; Treasurer, C. E. Whipple; Warden, C. J. Jansen; Conductor, C. G. Calvit; R. S.-N. G., C. E. Davis; L. S. N. G., David Gaerste; R. S. V. G., R. R. Robinson; L. S. V. G., Robt. Varenkamp; R. S. S., R. K. Knox; L. S. S., F. F. Farrell; Inner Guard, S. E. Calvit; Outer Guard, Martin Wago; Chaplain, Alfred Edwall.

Fund for Aid of Discharged Prisoners.

The amount of money subscribed to the Christmas fund for the Canal Zone penitentiary amounted to $57. A part of this sum was used for supplies for the Christmas dinner, and the remainder has been placed in the hands of the penitentiary chaplain to be used for the relief of convicts discharged from the institution. This is a standing fund and contributions to it will be welcome at any time during the year. All communications regarding this fund and its purposes may be addressed to Mrs. C. A. Devol, Culebra, or to the Chaplain, Canal Zone Penitentiary, Culebra.

United Spanish War Veterans.

A regular meeting of Camp Chagres No. 2, U. S. W. V., will be held in the I. C. C. Lodge Hall, Empire, on January 28, at the usual hour. Several recruits are to be mustered into the Camp, and it is requested that all comrades attend; uniforms and badges to be worn.

Missing Men.

Any one having any knowledge of the relatives, home address, or previous history of Jack Claes, said to be an Englishman, scow-foreman, who was accidentlly drowned at Cristobal on December 27, 1911, is requested to communicate with the British Vice-Consul, Colon.

Any one having information regarding the whereabouts of Rudolph Pettalkow, who left his home in Cedar Rapids, Iowa, three years ago, and is believed to be on the Isthmus, is requested to communicate with the American Legation.

Suicide.

Rudolph Gunner, who up to a month ago was employed in the Central Division, committed suicide Sunday evening, January 21, in House 48, Empire, by shooting himself through the right temple with a revolver. He was a native of Texas, was 36 years of age and had been on the Isthmus several times since 1904. His mother is living at Dallas, Texas.

Baseball at Porto Bello.

The Porto Bello ball grounds have been improved and the team desires games either on the home grounds or abroad. Communicate with Chas. Oettli, Porto Bello.

Stamp Sales and Money Orders.

Stamp sales at the Canal Zone Post-offices during the month of December, 1911, were the largest of any month in the record of the Zone postal service, amounting to $10,449.80. The sales during the period of six months ending on December 31, 1911, amounted to $43,222.98; for the corresponding period in 1910 they were $42,280.27.

Money orders issued during the six months ending December 31, 1911, numbered 117,395, for an aggregate value of $2,610,446.44. The fees amounted to $11,957.22. During the corresponding period in the preceding year, 107,748 orders, for $2,670,907.24, were issued and the fees collected amounted to $11,800.64.

The sailing date of the steamship *Cristobal* has been set for Sunday, January 28, at 2 p. m., from Dock No. 11, Cristobal.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, on January 31, 1912. All applicants for licenses as chauffeurs must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m. on January 31, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

Rodmen and Levelmen.

An examination to test the fitness of rodmen and levelmen for promotion will be held at Culebra on Sunday, February 4. Employes wishing to enter this examination should forward their applications through the head of the department or division in which they are serving to Mr. A. B. Nichols, chairman of the examining board, Culebra. Candidates should bring with them tables of the circular functions and triangles.

Misdirected Letters.

ANCON, C. Z., January 20, 1911.

The following insufficiently addressed letters originating in the United States and its possessions have been received at the office of the Director of Posts and may be secured upon reouest of the addressees:

Bartonl, Edward J.
Barker, Aubrey
Belzil, Mrs. Georgietta
Benny, Mrs. William
Bentley, Hugh S.
Berner, H. F.
Bishop, Christopher
Bolz, Fred
Bynon, Mrs. J.
Burke, Wm.
Burrows, Chas. (pkg.)
Carmody, Patrick
Calvo, Dr. J. E.
Cockett, Mrs.
Conrad, Herman
Coursey, E. J. A.
Days, Jos. H.
DeBarrows, D.
Dempster, Thos. C.
Deran, Thomas
Driscoll, Robert
Duncan, Roy
Dunn, Osar L.
Ewing, J. C.
Flint, Frank B.
Fleming, Philip B.
Ford, A. P.
Ford, Mrs. Herbert
Foster, Mrs. Gard
Fullinwider, P. A.
Gill, H. D.
Golden, Jno.
Greenwood, Miss Lova
Goldeke, Miss M. (pkg.)
Groff, Jack
Hall, Mandeville
Hanson, Mrs. Ben.
Harrison, W. C. Jr.
Hersh, W. L.
Hoele, Albert
Hoff, F. W.
Hood, Mrs. M. A. (2)
Hood, E. C. (2)
Hood, Mrs. M.
Horle, Albert M.
Jackson, Frank M. D.
Jamison, John B.
Jensen, Rudolph, Esq.
Jensen, Christ
Keenan, W. H.
Keernan, John C.
Keett, Dave.
Keller. Mr. & Mrs. John
Kenny, Mrs. William (pkg.)
King, Sam.
Lanzendoeffer, George
Lesley, Tom
Lewis, Mrs. J. F.
Logan, F. H.
Louis, John
McCracken, Roy
McCoy, W. M.
MacCullock, Robert G. Jr.
McDavid, Sarah
McHood, D. N.
McNamara, G. G.
McPherson, Mrs. Sarah
Manington, Mr. & Mrs. J.
Mararity, Mrs. Jno.
Marsh, Marvin
Martin. B.
Martin, Earl W.
Mathernson, Herman
Maex, Joseph
Meise, Geo. E.
Merrick, Ernestine Mrs. (2)
Michelle, Mr. & Co.
Mitchell, Mike
Mitchell, Mrs. Mary
Miller, J. Milton
Murrvin, William H.
Naylor, A. N.
Naylor, P. E.
Obenweisier, Miss Paulina
Pondexter, C. D.
Pennington, J. H. (2)
Reilly, Miss Gertrude
Roberts, Robert
Robinson D. W.
Sarvey, Wesley M.
Sasse, Mrs. Frank
Scott, Archibald
Skinner, V. H.
Slummins, Dr. H.W.
Smith, Vernon
Smith, Mrs. A. O. (2)
Smith, Miss Jeny
Steele, W. S.
Stewart, Chas.
Sublett, Allen
Tangney, Michael
Thomson, Walter S.
Toole, Thomas O.
Towles, Tom.
Turner, Edw. S. (pkg.)
Turnbull, Miss. Ida M. A.
Urdick, M. J.
Van Wormer, M. C.
Wall, S.
Watson, Miss Louise (pkg.)
Well, James W.
Weir, Mrs. J. E.
Wescott. F. M.
Wilkins, Walter R.
Willett, Henry E.
Will, James C.
Witner, George Stone, Esq.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending January 31, 1912 (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
January 25.....	......	1.20	7.12	1.32	7.37
January 26.....	......	2.00	7.53	2.12	8.19
January 27.....	......	2.47	8.40	3.00	9.08
January 28.....	......	3.42	9.38	3.58	10.07
January 29.....	......	4.46	10.44	5.07	11.16
			P.M.		
January 30.....	......	5.54	12.01	6.21	......
January 31.....	12.29	7.02	1.14	7.31	......

CANAL WORK IN DECEMBER.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., January 17, 1912.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of December, 1911.

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	50,199	1,359,554	132,840	1,542,593
Work excavation, wet	Cubic yards	533,409	2,337	278,960	814,706
Total work excavation	Cubic yards	583,608	1,361,891	411,800	2,357,299
Plant excavation, dry	....	....	....	....	....
Plant excavation, wet	Cubic yards	81,977	....		81,977
Total Canal Excavation	Cubic yards	665,585	1,361,891	411,800	2,439,276
Material placed in dams	Cubic yards	322,815	....	31,080	353,895
Concrete placed in locks and dams	Cubic yards	47,133	....	63,132	110,265
Explosives used	Tons (Gross)	68.20	237.61	30.16	335.97
Rock drilled	Feet	55,865	447,079	88,073	591,017
Tracks removed	Miles	....	12.15	....	12.15
New tracks laid	Miles	2.40	25.65	3.80	31.85
Rock crushed	Cubic yards	42,247	....	66,101	108,348
Cement used	Barrels	49,593	11	66,879	116,483
New roads built	Miles	0.28	....	....	0.28
Water mains laid	Feet	838	3,256	3,465	7,559
Sewers laid	Feet	623	535	301	1,459
Open drains and ditches dug	Feet	....	39,750	11,010	50,760
Average daily force	....	7,112	8,296	5,500	20,908
Average rainfall	Inches	2.44	0.78	1.59	1.19

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the Division Engineers, the inspection being cared for by this subdivision. Work was continued on the grinding of fixed irons and preparing the valve chambers for the installation of the valves, which work is being done under supervision of this office. This subdivision is also charged with general inspection of the masonry work of all the locks.

LOCK GATES AND PROTECTIVE DEVICES.

Shop work in the United States—Up to December 20, a total of 43,840 tons of structural steel had been accepted at the rolling mills, or about 85 per cent of the total, of which 4,028 tons were rolled and accepted between November 20 and December 20, and a total of 24,723 tons of riveted structural material was shipped from Rankin shops, or about 50 per cent of the total contract weight. Of this last item, 1,412 tons were shipped between November 20 and December 20. It should be noted that the above total includes parts lost on the steamship *Moldegaard*; the amount is believed to be about 2,700 tons. Mill orders have been placed for the replacement of the material lost on this steamer, and about 300 tons of same have been rolled up to December 20.

The manufacture and shipment of steel and iron castings for the gates continued during the month; more especially a considerable tonnage of manhole rings and covers was shipped. No more shipments of the pumping system of handrailing were made. One leaf 47 feet 4 inches high is being assembled at the Pittsburgh shops of the contractor to check the fitting of same. The following are details of shipments:

Gatun Locks—Upper guard gates, 4 leaves, 54 feet 8 inches high, Nos. 37 to 40 inclusive; all material has been completed and shipped. Upper and middle gates, upper lock, 8 leaves, 77 feet high, Nos. 29 to 36, inclusive; all completed and shipped. Safety and lower gates, upper lock, Nos. 21 to 28 inclusive; all completed and nearly all shipped. Middle and lower gates, middle lock, 8 leaves, 77 feet 10 inches high, Nos. 13 to 20, inclusive; no shipments of material for these gates have been made during the month.

Pedro Miguel Lock—Upper guard gates, 4 leaves, 54 feet 8 inches high, Nos. 50 to 53, inclusive, have been completed and shipped. Upper and middle gates, 8 leaves, 79 feet high, Nos. 54 to 61, inclusive; these gates have been completed in the shop and practically all shipped. Safety and lower gates, 8 leaves 79 feet high, Nos. 62 to 69, inclusive, have been completed in shop and practically all shipped. Lower guard gates, 4 leaves, 47 feet 4 inches high, Nos. 70 to 73, inclusive; have been about 75 per cent completed and perhaps 25 per cent shipped.

Miraflores Locks—Practically none of this material has been manufactured or shipped.

The output at the shops has lately been less than according to the schedule. It has, therefore, been decided to resume night work on certain parts.

LOCK GATE ERECTION.

Gatun—Upper guard gates, 54 feet 8 inches high, leaves 37 to 40, inclusive; work on these gates during the month consisted of reaming and riveting in the sheathing and grinding the end of leaf 37 for the reception of the end reaction castings. No end reaction castings have as yet been attached. The end plates have been caulked onto the leaves.

Upper gates, 77 feet high, leaves 33 to 36, inclusive: Erected during the month 24 panels of skeleton; riveted 34 panels of skeleton; sheathing erected, 39 panels.

Pedro Miguel—Upper guard gates, 4 leaves, 54 feet 8 inches high, leaves 50 to 53, inclusive: The total work during the month consisted of erecting 15 and riveting 18 panels of sheathing. There remain to be riveted in these 4 leaves about 28 panels of sheathing.

Safety gates, 4 leaves, 79 feet high, leaves 62 and 63: Bottom girders were placed. Leaves 64 and 65: Skeleton erected 2 panels high.

The total tonnage erected to January first, without regard to its being riveted or fully fitted, is about 4,700 tons, out of a total of 58,000 tons.

LOCK GATE RECESS COVERS.

The material for 14 recess covers, except cast iron cover plates for same, arrived at Cristobal on December 11. The unloading of this material proceeded very slowly so that it was not possible to deliver the material at Gatun until December 28. The contractors began erection on cover No. 21 on December 29. It is understood that 10 recess covers were lost on the steamship *Moldegaard* which was wrecked. These are to be replaced at once by the contractor. Sixteen additional covers have since then been received on the Isthmus.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office has cared for the technical matters relating to inspection as follows:

(1) *For the Stoney gate valves, purchased under Circular 614*—The second Stoney gate valve machine was tested and ordered shipped to the Isthmus. The first machine delivered was partially erected in place on the Isthmus. During the month tests continued on the test motors, purchased under this contract, for the quality of insulation and ability of the motors to withstand the severe climatic conditions.

(2) *For the rack railway and other material purchased under Circulars 619, 636-D, and 635*—For the different classes under these circulars, which are now under contract, the state of completion of delivery varies from about one per cent for carbon steel rack castings, to eighty-three per cent for some of the major items, and one hundred per cent for some of the minor items. On all portions of these contracts, satisfactory progress was made during the month. Satisfactory progress was also made during the month on Class 2, Circular 619, carbon steel rack castings, on which, as stated in report for the preceding month, the deliveries were very much behind time.

(3) *For the gate operating machines, Class 1, and miter gate machines, Class 2, purchased under Circular 627*—The first miter gate moving machine was tested at the works of the manufacturer, found to be satisfactory, shipped to the Isthmus, and, with the exception of the strut, the complete machine was received on the Isthmus. The second miter gate moving machine was practically completed and ready for test at the works of the manufacturer. The miter forcing machine was practically completed and will be tested at once.

(4) *For the gate and girder hoisting machinery for the emergency dams, purchased under Circular 616*—The tests conducted upon the types of worms for girder hoists gave information which was not available when the design was prepared and upon the information obtained, award for the worms was made. Casting and machine work progressed satisfactorily.

(5) *For the Gatun hydro-electric station*—The General Purchasing Officer was instructed to make award to the lowest bidders, as follows: Class 1, Items 1, 2, 3, 4, and 6, for turbines, governors, headgates, penstocks and lubricating system, respectively, to the Pelton Water Wheel Company. Class 2, Items 1, 2, and 3, generators and motor-driven exciters, to the General Electric Company. Class 3, Item 1, traveling crane, to the Niles-Bement-Pond Company. The foregoing equipment covers three 2,250 k. w. water turbines, three 2,500 k. v. a. electric generators, and three 20-ton cranes and auxiliaries,

as above mentioned, the total contract price being $145,600.50.

(6) *Electric towing locomotives*—Bids were received and canvassed, and award made upon alternative "A," for carbon steel. The General Purchasing Officer was authorized to make award for Item 1, Class 1, for one electric towing locomotive for trial to the General Electric Company. Class 1, Item 2—39 electric towing locomotives; award not yet made. Class 1, Item 3—Spare parts; award not yet made.

(7) *For the locomotive cranes, derricks and hoisting engines for erection plant of machinery and electrical equipment*—General Purchasing Officer was authorized to make award for Class 1, Items 1 and 2, for four 15-ton locomotive cranes, and auxiliary hooks and lines, to the Industrial Works, Bay City, Michigan Class 2, Items 1 and 2—Award not yet made.

The force installing machinery and electrical equipment on the Isthmus during the month set established bench marks for various Stoney gate valve machinery chambers, miter gate moving machines and cylindrical valves; set foundation bolts for six miter gate moving machines, installed bulkheads for test of two cylindrical valves, and distributed material for 360 feet of locomotive track on the east lock wall. During the month 101 cubic yards of concrete were placed.

EMERGENCY DAMS.

The preparation of working drawings, rolling and casting material and inspection of same in the United States, progressed satisfactorily during the month. Up to December 20, a total of 301 drawings of the turning and wedging machinery, and a total of 127 drawings of structural parts, were completed and approved. At the rolling mills and foundries about 1,500 tons of nickel steel and 837 tons of structural steel were rolled; and 561 tons of carbon steel castings and 250 tons of Vanadium steel castings were cast; besides this, 146 tons of carbon steel forgings, as well as the roller bearings for 3 dams and some other smaller parts were turned out.

AIDS TO NAVIGATION.

During the month, 109.5 acres of ground were cleared in the Gatun Lake section and Pacific Division for sites for range towers and reference targets, at an average cost of $18.58 per acre; 33,623 linear feet of trochas were cut, and 3,677 linear feet of profile taken. Four buoys were referenced, and five buoys were located and referenced in the Gatun Lake section.

Range 9-11—The concrete vestibules and newel posts for both front and rear towers were completed, and the temporary acetylene lights installed and exhibited.

Range 1-2—A temporary frame tower 24 feet high was set upon the foundation on the site of the front tower. The rear tower was completed, except the stairs, doors and windows. Both towers were fitted with locomotive headlights, which will be kept lighted for use in connection with dredging operations, as will also the lights in Range 9-11.

Range 13-14—The 29 bearing piles were armored with concrete to a depth of 6 feet below surface and the reinforced foundation pier, 24 feet in diameter and 6 feet high, was completed, and the tower wall carried up to a height of 7 feet. The rear tower walls were constructed to their full height, 48 feet.

Range 5-6. Gatun—Work on the foundation of both front and rear towers was begun.

The casting of stair treads, radial beams, stair strings, moldings and window lintels for the various towers was being carried on at the Central plant at Balboa.

Plans for two types of structures for the west breakwater light in Limon Bay were made during the month, and estimates of the cost are being prepared.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month one shovel was engaged on borrow pit excavation for the locks backfill, 37,331 cubic yards of material being removed.

Backfill—Backfilling behind the walls of all locks, and in the center wall of the upper and middle locks, was continued. The backfilling in the south approach wall, and in the center wall of the upper lock south of the intermediate gates, was completed. The quantity placed during the month aggregated 115,101 cubic yards, increasing the total to 1,124,043 cubic yards. On December 31 the backfilling was 69.99 per cent completed.

Receiving and Issuing Material—The receipts of rock exceeded the consumption by 4,087 cubic yards, and cement by 341 barrels. During the month 19,952 cubic yards of sand were consumed. Shipments of sand from the Pacific Division commenced December 29, 628 cubic yards having been received at the close of the month.

Mixing and Placing Plants—Both plants, and all portable mixers, were kept in satisfactory operation during the month.

Power Plant and Pumps—The operation of the power plant and pumps was satisfactory.

Iron and Steel Work—During the month 360.1 tons of fixed steel and 142,570 feet of reinforcing rods were placed; 15.7 tons of reinforcing rails, and 64.4 tons of electric return track were laid.

Concrete Work—There was a decrease of 317 cubic yards in the amount of concrete laid as compared with the figures for the preceding month. The daily average for the 25 working days was 1,744 cubic yards, as compared with a daily average during November of 1,829 cubic yards. The total amount of concrete placed during the month was 43,590 cubic yards, including 308 cubic yards of large stone. The place measurement exceeded the bucket measurement by 489.5 cubic yards. Of the total concrete, 4,280 cubic yards were placed in the upper lock, 474 cubic yards in the middle lock, and 38,836 cubic yards in the lower lock. The concrete work for the entire lock system was 88.06 per cent completed at the end of December.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)..	11.30	8.50
Average number of hours per day worked, per strand of cableway laying concrete and large stone (actual working time)	5.01	....
Average number of mixers per day	4.26	2.00
Average hourly output per mixer (actual working time), cu. yds.	59.09	79.44
Average amount of concrete and large stone laid per hour, per strand of cableway (actual working time) cu. yds.	29.22	....
Large stone laid, cu. yds	308	....
Concrete laid, cableways, cu. yds.	29,544	....
Concrete laid, through chute into dump cars, and by crane cu. yds.	1,630	....
Concrete laid, derricks, cu. yds..	....	2,964
Concrete laid, dump cars, cu. yds	....	7,236
Concrete laid, portable mixers...	....	1,418.5
Total amount of concrete and large stone laid, cu. yds.	31,482	11,618.5

GATUN DAM.

Construction during the month increased the total fill, as determined by cross sections of the material in place, by 322,815 cubic yards, making the total amount in place, 16,997,327 cubic yards.

Hydraulic Fill—The dredges increased the hydraulic fill by 89,752 cubic yards. The total hydraulic fill in place December 31, was 8,828,841 cubic yards.

Dry Fill—The material received from the Central Division, Mindi, and steamshovels Nos. 116 and 134, amounting to 233,063 cubic yards, was placed on the north and south toes of the dam, east and west of the spillway, making the total dry fill in place, 8,168,486 cubic yards.

GATUN SPILLWAY.

Excavation—During the month 80 cubic yards of rock were excavated by hand in preparing foundations, making the total December 31, 1,586,376 cubic yards.

Backfill—During the month 629 cubic yards of material were used in backfilling behind the west wall of the spillway.

Concrete—The work of placing concrete was continued. The amount placed during the month aggregated 3,543 cubic yards, which increased the total to 168,449 cubic yards. The concrete work for the spillway was 74.4 per cent completed.

HARBOR AND CHANNEL SECTION.

Excavation Below Sealevel at Mindi—During the month two steamshovels removed 50,199 cubic yards of rock from the canal prism.

Dredging from Ocean to Mindi—Seven dredges removed 484,024 cubic yards of earth and 49,385 cubic yards of rock from the canal prism. In addition, the dredge *Mindi* removed 1,409 cubic yards of earth from the French canal for the proposed dynamite dock; the *Sandpiper* 72,798 cubic yards of earth from the East Diversion at Gatun; Derrick Barge No. 1 (clam shell) 4,008 cubic yards of earth from the East Diversion at Mount Hope, and the *Chagres* 3,762 cubic yards of earth from the Dry Dock slip. On December 31, 40 feet of water could be carried from Zero to Zero plus 1,900 feet; 35 feet to mile mile 3 plus 2,700 feet; 30 feet to mile 3 plus 3,600 feet; 20 feet to mile 5 plus 2,438.9 feet, the point of intersection with the French Canal.

PORTO BELLO.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day, hours............	8.00
Average number of hours worked per day..	3.61
Average number of cubic yards per hour of working day..........................	211.235
Average number of cubic yards per working hour................................	468.28
Maximum day's output (4 hours 53 minutes) cu. yds.........................	2,220.00
Average day's output (25 days) cu. yds....	1,689.88
Average hourly output (190 hours 50 minutes) cu. yds.........................	221.38
Total output for the month, cu. yds......	42,247.00

SAND, STONE, AND CEMENT SERVICE.

In connection with this service plant steamed 4,400 miles, handled 502 barges .and carried 1,860 passengers.

WEST BREAKWATER, COLON.

46,591 cubic yards of material were excavated, all of which was dumped from the trestle. The double track trestle was extended 728 linear feet. On December 31 the trestle extended 8,746 linear feet from shore. During the month 6,179 cubic yards of Porto Bello rock were placed on the breakwater, making a total of 17,108 cubic yards used for that purpose to January 1. The total amount of rock dredged and dumped on the west breakwater to December 1, 1911, was 805,332 cubic yards. During the month 49,385 cubic yards of rock were dredged and dumped, increasing the total to 854,717 cubic yards. The amount of dry fill placed to January 1 was 570,495 cubic yards.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended as required to facilitate construction work.

Central Division.

During the month of December the total amount of material excavated in the Central Division was 1,361,891 cubic yards, of which 164,252 cubic yards were classified as earth 1,197,639 cubic yards as rock. Of this quantity, 1,351,082 cubic yards were removed by steamshovels, and contractors removed 2,337 cubic yards by sluicing and 8,472 cubic yards by hand. The total, 1,361,891 cubic yards consisted of primary excavation for the canal prism.

The daily average number of steamshovels at work during the month was 41.54, and the total number of shovel days was 1,038½, as compared with 41.54 at work during the month of November, with 997 shovel days.

For comparison with the work done by the steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'kg days.	Av. yards per shovel day.
		Rock.	Earth.			
1910:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
Dec.....	1,386,753	1,008,998	377,755	45.58	26	1,170.30
1911:						
Dec. ..	1,351,082	1,189,867	161,215	41.54	25	1,300.89

Rainfall at Empire: 1910, 9.06 ins.; 1911, 0.20 ins.

The above table shows the average output per shovel to be 11.16 per cent greater in December, 1911, than in the corresponding month of the previous year.

The total amount of the material excavated from the prism in the Culebra Section of the Central Division in December, 1911, 1,351,082 cubic yards, was the highest record in that section for the month of December, the previous high record being December, 1910, when 1,211,400 cubic yards were removed.

The total estimated amount of material to be removed in the Central Division, according to the revised estimate of July 1, 1911, was 101,801,296 cubic yards, and up to January 1, 1912, 85,426,915 cubic yards had been removed, leaving 16,374,381 cubic yards to be removed in order to complete all excavation in the Central Division. From these figures it will be seen that 83 92 per cent of all excavation in the Central Division had been completed up to the close of the month of December and 16.08 per cent remained uncompleted.

Considering the two sections which compose the Central Division, the excavation completed and that to be completed at the close of December operations was as follows:

CULEBRA SECTION.	*Cu. Yds.*
Completed	73,502,824
To be completed	15,941,181

CHAGRES SECTION.	*Cu. Yds.*
Completed	11,924,091
To be completed	433,200

From the above figures it will be seen that the Culebra Section, locally known as the "Culebra Cut," was 82.18 per cent completed, with 17.82 per cent to be completed; the Chagres Section was 96.49 per cent completed, with 3.51 per cent to be completed.

During the month 63,915 cubic yards of material were hauled from the canal prism and dumped in the embankment for the roadbed of the relocated Panama railroad. The total amount of spoil from the Central Division for this purpose at the close of the month was 4,059,291 cubic yards. The Central Division also delivered at Gatun, 201,868 cubic yards of rock and earth for use in the construction of the dam, making the total for this purpose at the end of December, 5,056,167 cubic yards During the month 10,611 cubic yards of rock and earth were furnished for the Colon breakwater, and 10,640 cubic yards to the Pacific Division for backfill at Pedro Miguel locks.

The daily average number of laborers at work on the whole Division during the month was 7,509, and the daily average number of gold employes was 787.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

Excavation—The total excavation during the month amounted to 132,840 cubic yards, of which 26,177 cubic yards were classified as earth, and 106,663 cubic yards as rock.

Filling and Embankment—During December, 7,350 cubic yards of dry filling were added to the prism of the west dam at Pedro Miguel, increasing the total amount of material in place at the close of the month to 318,921 cubic yards. The backfill at Pedro Miguel was increased by 32,021 cubic yards, the total in place at the end of the month amounting to 469,309 cubic yards.

At Miraflores, 23,730 cubic yards were added to the dry fill in the toes of the west dam, increasing the total amount in place at the end of the month to 1,070,377 cubic yards. The hydraulic fill for the core of the west dam was completed during the latter part of November, and amounted to 661,048 cubic yards. The backfill was increased by 74,093 cubic yards, the total aggregating 351,681 cubic yards at the end of the month.

Pedro Miguel Lock—The general backfilling of the lock walls was continued. The McClintic-Marshall Construction Company dismantled chamber crane No. 1 at Pedro Miguel, moved it to Miraflores and commenced its reerection in the east chamber of the lower locks on December 26. The amount of iron placed in the mansonry aggregated 198,507 pounds.

Concrete Work—The total amount of concrete and large stone laid at Pedro Miguel was 14,360 cubic yards, as compared with 19,622 cubic yards during November. The concrete was placed as follows: 117 cubic yards in the northeast wing wall; 3,855 cubic yards in the north center guide wall; 77 cubic yards in the northwest wing wall; 4,016 cubic yards in the east wall; 4,035 cubic yards in the center wall; 917 cubic yards in the west wall; 542 cubic yards in the floors; 801 cubic yards in the southeast wing wall.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT PEDRO MIGUEL.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	2.06	4.95
Average number of mixers per day	....	4.52
	Cu. Yds.	*Cu. Yds.*
Average hourly output per mixer (actual working time)	....	23.53
Average amount of concrete and large stone laid per hour, per chamber crane (actual working time)	21.67	....
Large stone laid	....	....
Concrete laid	1,118.00	13,291.00
Total concrete laid	6,009.00	13,613.00

Permanent plant consisted of one chamber crane, averaging 0.84 units per day.

Auxiliary plant consisted of three ½-cubic yard mixers, daily average 2, and three 2-cubic yard mixers, daily average 2.52. Auxiliary placing plant consisted of five cranes and derricks, daily average 3.88 units, and a daily average of 1.76 mixers discharging directly into forms.

Miraflores Locks—Excavation for the culvert system, and the placing of concrete in the lower lock were continued during the month. Dry excavation was continued in the lower lock by the use of 8 steamshovels. The backfilling of the east and west lock walls, also filling on the east and west toes of the west dam were continued. The sinking of foundation caissons for the north center guide wall, and the construction of concrete caisson shells were continued. During the month the amount of iron placed aggregated 319,730 pounds.

Concrete Work—The total amount of concrete and large stone laid at Miraflores was 48,772 cubic yards, as compared with 41,726 cubic yards during November. The concrete was placed as follows: 549 cubic yards in the north center guide wall; 18,177 cubic yards in the east wall; 17,297 cubic yards in the center wall; 6,293 cubic yards in the west wall; and 6.456 cubic yards in the floors.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	12.00& 8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	5.32	5.79
Average number of mixers per day	6.64	4.72
	Cu. Yds.	*Cu. Yds.*
Average hourly output per mixer (actual working time)	33.25	29.77
Average amount of concrete and large stone laid per hour, per berm, or chamber crane (actual working time)	50.14	....
Large stone laid	....	....
Concrete laid	39,228.00	9,544

Two berm cranes began 12-hour day on December 19.

Permanent plant consisted of 4 berm cranes, daily average 3.92, and 2 chamber cranes, daily average 1.96.

Auxiliary placing plant consisted of 3 locomotive cranes and derricks, daily average 1.40, and 3.68 mixers discharging directly into forms.

DISTRICT NO. 2—DREDGING.

The following is a statement of the output of the five dredges which were in operation during the month, and of the amount of material excavated hydraulically:

DREDGE	Type.	WORK.		PLANT.		Total.	Remarks.
		Earth	Rock.	Earth.	Rock.		
		Cu. Yds	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	
Cardenas	Dipper	8,750	23,400	....	....	32,150	Place measurement
Marmot	Ladder	14,231	11,8 0	....	....	26,111	Place measurement
Badger	Ladder	137,771	....	....	....	137,771	Scow measurement
Mole	Ladder	1,900	12,750	....	....	14,650	Scow measurement
Culebra	Suction	10,498	....	......	....	10,498	Scow measurement
Total	....	173,150	48,030	....	....	221,180	
Hydraulic excavation	....	*57,780	....	....	....	57,780	Place measurement
Grand Total	....	230,930	48,030	....	....	278,960	

*Excavated from Canal prism, south of Miraflores lock site.

CHAMÉ SAND EXCAVATION.

Approximately 42,201 cubic yards of sand were excavated at Punta Chamé and delivered at Balboa.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Work was continued on the Panama street improvements.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours)	8.00
Average number of hours per day (actual working time)	7.37
Average number of cubic yards crushed per hour of working day	330.50
Average number of cubic yards crushed per working hour	358.58
Total output for the month, cubic yards	66,101.00

Relocation of Panama Railroad.

During the month 347,112 cubic yards of material were excavated, increasing the total excavation at the close of the month to 9,623,171 cubic yards, and 483,066 cubic yards of material were placed in embankment, increasing the total for this purpose to 15,644,584 cubic yards.

The daily average number of steamshovels at work was 10.4, and the total number of working days was 25.

For comparison with the work done by steamshovels during the preceding month, and during the corresponding month of the previous year the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'kg days.	Av. yards per shovel day.
		Rock.	Earth.			
1910:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
Dec.	233,720	132,380	101,340	6.00	26	1,498
1911:						
Nov.	316,010	223,155	92,855	10.75	24	1,220
Dec.	345,520	197,355	148,165	10 40	25	1,329

No temporary trestle was driven during the month. Work on bridges and culverts was continued. Seven hundred and seventeen linear feet of 70-pound track were relaid with 90-pound track, the total of 70-pound and 90-pound track at the end of the month being 130,428 feet and 47,663 feet, respectively. The force averaged 2,379 men.

Quartermaster's Department.

LABOR.

There was a decrease in the force of Spanish laborers during the month. Some of them were repatriated, and some turned over to the Panama Development and Manufacturing Company.

QUARTERS.

All occupants have vacated Commission quarters in the San Pablo-Tabernilla District. Practically all the houses have been sold and most of them demolished. The two police stations at Tabernilla and San Pablo will be moved to points on the Panama railroad relocated line, and the Commissary at Tabernilla to Mount Hope. Assignment of the families from the San Pablo-Tabernilla District at other points has caused a temporary congestion in family quarters, and there are no vacancies at present.

BUILDING CONSTRUCTION.

The fire station at Cristobal and the commissary addition at Corozal were completed during the month. The cost of the Cristobal fire station was $13,602.29. Seven gangs are at work on the Tenth Infantry quarters at Las Cascadas, and most of these quarters will be completed within the month of January.

MATERIAL AND SUPPLIES.

Owing to a congestion in shipping circles in New Orleans and New York it has been difficult to secure deliveries on lumber and piling. Serious inconvenience has been caused by the delay on these shipments. The value of material received from the United States during the month was $860,021.90. Supplies during the month were delivered by 36 steamers, the total weight of cargo aggregating 25,813 tons, exclusive of 745,914 feet B. M. yellow pine lumber, 300,012 feet B. M. Douglas fir lumber, 46,201 feet B. M. white oak lumber, 536 pieces of piling, and 56,006 cross ties.

Subsistence Department.

The operation of the European laborers' messes, the colored laborers' kitchens and the line hotels showed a net profit of $1,374.60. The operation of the Hotel Tivoli showed a net profit of $3,771.58, and there was a net loss on restaurants, penitentiary, tugs and dredges of $35.92. The net profit on subsistence operations was $5,110.26.

Department of Civil Administration.

COURTS.

During the month one civil case was disposed of in the Supreme Court, 18 civil and 36 criminal cases in the Circuit Courts, and 67 civil and 537 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for December amounted to $427,480.48, and the fees to $2,051.27. Receipts from stamp and card sales, and newspaper postage aggregated $10,514.84. The total collection of revenues made by the Division was $52,401.51, and the collection on account of court fines, costs and fees, $3,279.68.

Twenty-seven vessels entered at and 28 vessels cleared from the port of Ancon; and 23 vessels entered at and 27 vessels cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 538, of whom 487 were men and 51 women. Twenty-three nations, or 45 separate states and dependencies were represented. The total number of arrests for the month was an increase of two as compared with the month of November. Thirteen convicts were committed to the penitentiary, and 9 were discharged, leaving 145 in confinement at the close of the month. The cost of guarding and subsisting the convicts was $2,997.84, and the value of their work on Canal Zone roads was $2,472.80.

DIVISION OF FIRE PROTECTION.

Sixteen fires were reported in the Canal Zone during the month, as compared with 10 in November. The damage to Commission property was $52.38, and to private property $26.00.

DIVISION OF PUBLIC WORKS.

In the City of Panama the average daily consumption of water was 1,526,719 gallons, and in Colon 1,100,426 gallons.

The usual inspection and maintenance work of this division was performed during the month.

DIVISION OF SCHOOLS.

Due to the holidays, the schools were in session but fifteen days. The net enrollment in the white schools during the month was 1,161, and the average daily attendance 977.2, or 84 per cent of the enrollment; and in the colored schools the net enrollment was 1,135, and the average daily attendance 703.9, or 62 per cent. Forty-six white and 26 colored teachers were employed in the division on December 31.

Department of Sanitation.

The total number of deaths from all causes among employes was 44. These were divided as follows: From disease, 24, and from violence, 20, giving the annual average per thousand of 5.68 and 4.74, respectively.

The annual average death rate per thousand among employes for the month of December in previous years since American occupation was as follows:

1904	19.44
1905	45.73
1906	30.27
1907	18.11
1908	25.03
1909	13.84
1910	10.91

The annual average death rate per thousand in the cities of Panama, Colon, and the Canal Zone, including both employes and non-employes, was 20.30.

The annual average death rate per thousand for the month of December among the same class of population for previous years was as follows:

1904	44.75
1905	58.78
1906	39.21
1907	28.50
1908	26.15
1909	21.50
1910	25.16

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was, for whites, 5.71, blacks, 5.68, giving a general average of 5.68. For the same month during 1909, the annual average death rate per thousand from disease was, whites, 8.39, blacks, 10.67, giving a general average of 10.13, and for the same month during 1910, whites, 5.59, blacks, 8.79, giving a general average of 7.94.

Among employes during the month, deaths from the principal diseases were as follows: Amoebic abscess of liver, 1; dysentery, 3; lobar pneumonia, 4; malaria fever, E. A., 2; tuberculosis of the lungs, 3, leaving a balance of 11 deaths from all other diseases, and 20 deaths from external violence.

No cases of yellow fever, small pox, or plague originated on or were brought to the Isthmus during the month.

Respectfully,
GEO. W. GOETHALS, *Chairman.*

OFFICIAL CIRCULARS.

Canal Zone Census.

CULEBRA, C. Z., January 20, 1912.

CIRCULAR No. 429.

A census of the Canal Zone will be taken by the Department of Civil Administration under the authority of the Executive Order signed by the President, January 12, 1912. Same will be begun on, and taken as of date, February 1, 1912, and will be completed as soon after that date as may be possible.

To insure the success of this undertaking the cooperation of all departments and divisions of the Isthmian Canal Commission and the Panama Railroad Company is imperative, and it is directed that all employes of the Commission and the Railroad Company called upon shall furnish such information and assistance to the Census Division as may be possible.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Half Rate Mileage Books.

CULEBRA, C. Z., January 16, 1912.

CIRCULAR No. 420-B:

Half rate mileage books must be purchased before the arrival of passenger trains at stations. Agents will not be required to issue these books after a train arrives.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The following is the schedule for moving picture entertainments for the week January 29 to February 3: Monday, Cristobal; Tuesday, Gatun; Wednesday, Gorgona; Thursday, Corozal; Friday, Empire; Saturday, Culebra.

Official results of the Telephone Athletic Meet, held on January 19, 1912, follow:

Fifteen Yard Dash—1st, Mathews, Gatun, $1\frac{4}{5}$ seconds; 2nd, Ellsworth, Culebra, 2 seconds; Flynn, Gorgona, 2 seconds. (The two men tied with 2 seconds ran over with the same results. Therefore the points were divided, Culebra getting 2, and Gorgona 2.)

Shot Put—1st, MacDonald, Empire, 43 feet 8 inches; 2nd, Anderson, Camp Elliott, 38 feet 4 inches; 3rd, Mabstedt, Gatun, 37 feet 4 inches.

Running High Jump—1st, Koperski, Cristobal, 5 feet 6 inches; 2nd, Vance, Cristobal, 5 feet 4 inches; 3rd, Sherrard, Gatun, 5 feet $2\frac{1}{2}$ inches.

Running Broad Jump—1st, Thompson, Camp Elliott, 17 feet $11\frac{1}{2}$ inches; 2nd, Vance, Cristobal, 17 feet 9 inches; 3rd, Greene, Cristobal, 17 feet 7 inches.

Three Standing Broad Jumps—1st, Cornthwaite, Culebra, 30 feet $2\frac{1}{2}$ inches; 2nd, Dirkle, Camp Elliot, 29 feet 6 inches; 3rd, Robinson, Gorgona, 28 feet 7 inches.

Relay Race (eight men)—1st, Culebra, $39\frac{3}{5}$ seconds; 2nd, Gorgona, $40\frac{3}{5}$ seconds; 3rd, Empire, $42\frac{3}{5}$ seconds. Only 5 points given in this event.

Points won as follows: Cristobal, 12; Culebra, 12; Camp Elliott, 11; Gatun, 7; Empire, 5; Gorgona, 3; Corozal, 0. Cristobal and Culebra tied for first place, each making 12 points: the referee, W. H. Warr, tossed a coin to decide first place, Cristobal winning the toss. Entries—Camp Elliott, 17; Gorgona, 15; Culebra, 14; Empire, 12; Gatun, 7; Corozal, 4.

COROZAL.

Names are being received for the Handicap Pool Tournament. The winners of first, second, and third places will receive prizes.

Illustrated song slides were shown at the moving picture show last week. Mr. Case of Culebra sang three songs, and Mrs. Hinton accompanied at the piano.

Thirty-five new phonograph records and 38 new library books have been received at the clubhouse this month. Another order for library books is now being filled in the States.

CULEBRA.

The following is the standing of the Duck Pin Tournment today by number:

Captain.	Score	Captain	Score
Baumer	2,484	Silver	1,339
Smith	2,461	Driscoll	1,295
Coppin	2,457	Crain	1,194
Wheeler	2,549	Kersey	1,226

At the "smoker" on Thursday evening over 200 men were present. Orchestral music during the evening was furnished by the 10th Infantry Orchestra. The program consisted of a balancing stunt, Mr. Tudor; readings and songs, Mr. Christian; bass solo with colored slides, Mr. Case; wrestling match, Greening and Lutral of Empire; minstrel sketches, Emery and Cogan. Popular songs were sung and refreshments were served at the close of the entertainment.

EMPIRE.

The bowling tournament in duck and candle pins which started January 15 has 25 entries and the high score for six games, three in duck pins and three in candle pins, bowled by Rodeigheiro and Pinney, was 1,144. The high single score was made by Rodeigheiro, 126.

The monthly handicap pool tournament in which there were 25 entries was won by D. McKeever.

There was a large attendance Saturday evening, January 20, to see the pool games between the Gatun players and the Empire men. Gatun was represented by DePoorter and Dalton and Empire by Hirsh and Pearson. DePoorter won his game from Hirsh, and Pearson won from Dalton. The Empire men will go to Gatun on Saturday, January 27, for a return game. The scores were as follows: DePoorter, 125, Hirsh 42; Dalton 92, Pearson 125. High runs, DePoorter 27, Hirsh 14, Pearson 15-15-15, Dalton 15.

GORGONA.

Starting next Monday night, January 29, there will be formed both Spanish and French classes. Mr. Henry Page of Colon will be the teacher. The classes will meet every Monday and Thursday night at 7.30. Miss Osario will teach classes in Spanish, Tuesday and Friday afternoons at 2.30. This class will be for men and women who would like to learn Spanish and can meet to study during the day.

Volley ball practice is held every Monday night at 7.30. This is considered one of the best games known for the tropics. A representative team will play a game with Empire on the Empire floor, on Saturday, January 27.

The Checker Club held a smoker last Thursday night, January 19. W. I. Hosden, president, and M. S. Fox, secretary, served the refreshments.

The following moving pictures will be shown next Saturday night: Pineapple Cannery in China, Betty's Apprenticeship, Her Artistic Temperament, The Lass Who Could'nt Forget, A Fatal Resemblance, Billy's Valentine.

GATUN.

Two new Spanish classes were organized on Wednesday, January 17.

Six 19-ounce jointed ivory-tipped pool cues have been received from the States and can be purchased by any member at $2.50 each.

The local rag-time duck pin tournament closed Tuesday evening, January 16, with two teams tied at 603 pins each. The results of the roll-off are: MacKelly, 96, 88, 79,—263; Durand, 106, 93, 93—292, total 555. Vierbuchen, 82, 93, 91—266; Severn, 75, 88, 77—240, total 506.

The following high scores in duck pins were rolled during the past week: Hughes, 127; Gamble, 110; Coleman, 113; Walters, 115; Vierbuchen, 115, 114; Dalton, 115, 110.

CRISTOBAL.

On Saturday, January 20, in the indoor baseball game the boys of Cristobal scored 29 to the Gatun boys 6; basket ball in the afternoon, Cristobal 19, Gatun 9. Cristobal also won all three games in the bowling match. Arrangements are being made for a return series at Gatun.

The subject to be discussed at the session of the Debating Club to be held on Wednesday evening, January 31, will be resolved that "The Country Boy has More Advantages than the City Boy." All men are invited to attend these sessions of the Debating Club whether members or not.

BASEBALL.

RESULT OF GAMES, JANUARY 21.

At Empire—10th Infantry, 9; Com. Sub., 4.
At Ancon—Ancon, 8; Empire, 2.

STANDING OF CLUBS.

	P.	W.	L.	P.C.		P.	W.	L.	P.C.
Ancon	5	4	1	.800	Empire	4	1	3	.250
Com. Sub.	4	3	1	.750	10th In'ty.	5	1	4	.200

SCHEDULE FOR JANUARY 28.

At Empire—Empire vs. 10th Infantry.
At Ancon—Com.-Sub. vs. Ancon.

GAME AT EMPIRE, JANUARY 21, 1912.

10th Inf.	AB.	H.	PO.	A.	E.	C.-S.	AB.	H.	PO.	A.	E.
Delah'ty,cf	4	2	0	0	0	Buchan'n,cf	4	2	1	0	0
Webber,lf.	4	1	3	0	0	Herring,3b.	4	0	3	3	2
Smith,ss.	4	1	2	1	0	Curtis,ss.	4	0	0	2	3
Trickey,c.	5	3	10	0	0	Kellogg,1b.	4	1	7	1	0
Lucas,1b.	5	1	11	1	2	Sullivan,lf.	4	0	0	0	0
Cassady,3b	5	3	0	1	1	Coffin,rf.	4	0	1	0	0
Brennan,rf.	3	1	0	0	0	M'Custy,2b	4	2	1	1	0
VanOt'n,p.	4	1	1	5	0	Beard,c.	4	0	11	0	0
Saluski,2b.	5	0	0	2	0	Davis,p.	4	1	0	5	0
Totals	39	13	27	10	3	Totals	36	6	24	12	5

Infantry	2	0	0	3	0	0	2	2	x—9
Com.-Sub	1	0	0	0	0	1	0	0	2—4

Runs—Infantry: Delahanty, Webber,(2), Smith(2), Trickey (2), Lucas, Brennan; Com.-Sub: Buchanan (2); Kellogg, Sullivan. Earned runs—Infantry 5, C.-S. 2. Two-basehits—Trickey (2), Kellogg, Cassady. Buchanan (2), Trickey. Sacrifice hits—Webber. Left on bases—Infantry 12, Com. Sub. 5. Stolen bases—Smith (2), Trickey, Brennan. First base on errors—Infantry 4, Com.-Sub. 3. Base on balls—off Davis 5. Struck out—by Davis 9, by Van Ottman 9. Hit by pitcher—by Davis 1 (Delehanty). Double plays—Davis to Kellogg to Herring. Umpire—Irwin. Time of game—1.50. Scorer—Garrett.

GAME AT ANCON, JANUARY 21, 1912.

Lindberg,rf	4	2	1	0	0	Bryan,3b.	4	0	1	3	0
Edwards,lf.	4	1	1	0	0	VanZ'ndt,lf	4	2	1	1	0
Drennan,cf	2	0	2	0	0	Maguire,1b	4	1	9	1	1
Smith,2b.	4	2	0	3	1	Markley,ss.	3	0	5	4	0
Potter,ss.	3	1	4	4	0	Dau'ty,2b.	4	0	2	2	0
Pearman,3b	4	3	1	3	1	Murphy,cf.	4	2	2	0	0
Guptil,2b.	4	2	12	0	0	Hepler,rf.	4	0	1	0	0
Hodnett,c.	4	1	6	1	0	Cushing,c.	3	0	2	2	0
Russell,p.	4	3	0	4	0	Barnes,p.	1	0	0	1	0
						Marshall,p.	2	0	0	1	2
Totals	33	15	27	15	2	Totals	32	5	23*	15	3

Ancon	0	4	0	1	1	2	0	0	x—8
Empire	0	0	2	0	0	0	0	0	0 · 2

Runs—Ancon: Drennan, Smith, Pearman (3), Hodnett (2), Russell; Empire: Bryan, Van Zandt. Earned runs—Ancon 6, Empire 1. Two base hits—Van Zandt, Pearman, Smith (2). Sacrifice hits—Potter. Stolen bases—Hepler, Pearman, Hodnett (2), Russell (2). First base on errors—Ancon 1, Empire 1. Base on balls—off Marshall 1, off Russell 1. Struck out—by Marshall 1, by Russell 6. Hit by pitcher—by Marhsall 1, (Drennan), by Russell 1 (Markley). Left on bases—Ancon 4, Empire 5. Wild pitch—Marshall. Umpire—Foster. Time of game—1.50. Scorer—Hoffman.

*Edwards called out by umpire for interference.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Colon	P. R. R.	Monday	Jan.	22
Advance	P. R. R.	Saturday	Jan.	27
Panama	P. R. R.	Saturday	Feb.	3
Allianca	P. R. R.	Friday	Feb.	9
Colon	P. R. R.	Friday	Feb.	16
Advance	P. R. R.	Friday	Feb.	23
Panama	P. R. R.	Thursday	Feb.	29
Allianca	P. R. R.	Wednesday	Mar.	6
Colon	P. R. R.	Wednesday	Mar.	13
Advance	P. R. R.	Tuesday	Mar.	19
Panama	P. R. R.	Tuesday	Mar.	26

CRISTOBAL TO NEW YORK.

Allianca	P. R. R.	Sunday	Jan.	28
Cristobal	P. R. R.	Sunday	Jan.	28
Colon	P. R. R.	Saturday	Feb.	3
Advance	P. R. R.	Friday	Feb.	9
Panama	P. R. R.	Friday	Feb.	16
Allianca	P. R. R.	Thursday	Feb.	22
Colon	P. R. R.	Thursday	Feb.	29
Advance	P. R. R.	Wednesday	Mar.	6
Panama	P. R. R.	Wednesday	Mar.	13
Allianca	P. R. R.	Tuesday	Mar.	19
Colon	P. R. R.	Tuesday	Mar.	26
Advance	P. R. R.	Monday	Apr.	1
Panama	P. R. R.	Sunday	Apr.	7

NEW YORK TO COLON.

Almirante	U. F. C.	Wednesday	Jan.	17
Prinz Sigismund	H.-A.	Saturday	Jan.	20
Carrillo	U. F. C.	Saturday	Jan.	20
Trent	R. M.	Saturday	Jan.	20
Santa Marta	U. F. C.	Wednesday	Jan.	24
Bluecher	H.-A.	Thursday	Jan.	25
Prinz August Wilhelm	H.-A.	Saturday	Jan.	27
Turrialba	U. F. C.	Saturday	Jan	27
Metapan	U. F. C.	Wednesday	Jan.	31
Altai	H.-A.	Friday	Feb.	2
Tivives	U. F. C.	Saturday	Feb.	3
Sibiria	H.-A.	Saturday	Feb.	3
Tagus	R. M.	Saturday	Feb.	3
Zacapa	U. F. C.	Wednesday	Feb.	7
Prinz Eitel Friedrich	H.-A.	Saturday	Feb.	10
Sixaolo	U. F. C.	Saturday	Feb.	10
Almirante	U. F. C.	Wednesday	Feb.	14
Carrillo	U. F. C.	Saturday	Feb.	17
Oruba	R. M.	Saturday	Feb.	17
Prinz Sigismund	H.-A.	Saturday	Feb.	17
Santa Marta	U. F. C.	Wednesday	Feb.	21
Prinz August Wilhelm	H.-A.	Saturday	Feb.	24
Sibiria	H.-A.	Saturday	Mar.	2
Orotava	R. M.	Saturday	Mar.	2
Prinz Joachim	H.-A.	Saturday	Mar.	9
Magdalena	R. M.	Saturday	Mar.	16

COLON TO NEW YORK.

Zacapa	U. F. C.	Thursday	Jan.	25
Prinz Eitel Friedrich	H.-A.	Tuesday	Jan.	30
Sixaola	U. F. C.	Tuesday	Jan.	30
Almirante	U. F. C.	Thursday	Feb.	1
Prinz Sigismund	H.-A.	Saturday	Feb.	3
Carrillo	U. F. C.	Tuesday	Feb.	6
Oruba	R. M.	Tuesday	Feb.	6
Santa Marta	U. F. C.	Thursday	Feb.	8
Prinz August Wilhelm	H.-A.	Tuesday	Feb.	13
Turrialba	U. F. C.	Tuesday	Feb.	13
Metapan	U. F. C.	Thursday	Feb.	15
Sibiria	H.-A.	Monday	Feb.	19
Tivives	U. F. C.	Tuesday	Feb.	20
Orotava	R. M.	Tuesday	Feb.	20
Zacapa	U. F. C.	Thursday	Feb.	22
Prinz Eitel Friedrich	H.-A.	Tuesday	Feb.	27
Prinz Sigismund	H.-A.	Monday	Mar.	4
Magdalena	R. M.	Tuesday	Mar.	5
Prinz August Wilhelm	H.-A.	Tuesday	Mar	12
Thames	R. M.	Tuesday	Mar.	19

NEW ORLEANS TO COLON.

Cartago	U. F. C.	Saturday	Jan.	20
Abangarez	U. F. C.	Wednesday	Jan.	24
Heredia	U. F. C.	Saturday	Jan.	27
Parismina	U. F. C.	Wednesday	Feb.	7
Abangarez	U. F. C.	Wednesday	Feb.	14
Cartago	U. F. C.	Saturday	Feb.	10
Heredia	U. F. C.	Saturday	Feb.	17

COLON TO NEW ORLEANS

Atenas	U. F. C.	Thursday	Jan.	25
Abangarez	U. F. C.	Thursday	Feb.	1
Cartago	U. F. C.	Thursday	Feb.	1
Heredia	U. F. C.	Thursday	Feb.	8
Parismina	U. F. C.	Thursday	Feb.	15
Atenas	U. F. C.	Thursday	Feb.	15
Cartago	U. F. C.	Thursday	Feb.	22
Abangarez	U. F. C.	Thursday	Feb.	22

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 2 p. m.; ships for New York via Kingston on Tuesdays at 1.30 p. m., and Thursdays at 11 a. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JANUARY 31, 1912. No. 23.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Cargo-Handling Appliances at Terminal Docks.

A committee has been appointed to consider and report upon the facilities to be provided on the terminal docks at Balboa and Cristobal for the convenient and economical unloading and loading of vessels, and the transfer and storing of such freight as may be considered necessary. The work of the committee will include the arrangement of all tracks on wharves and piers, all matters connected with cranes and other cargo-handling appliances, and the general characteristics of all wharf and pier superstructures. The committee consists of Col. H. F. Hodges, Civil Engineer, U. S. N., H. H. Rousseau, Mr. S. B. Williamson, and Mr. J. A. Smith.

Use of Relocated Line.

Beginning on February 15, the relocated line of the Panama railroad will be used for all trains between Gorgona and Gatun, and the removal of the present track will begin shortly thereafter in order that it may be entirely out of the way by April, when Gatun Lake will begin to rise to the fifty-foot level. Between Gorgona and Panama the present line will continue in service until the Canal work is approximately completed. Trains will cross from the present to the relocated line by means of the tracks on top of the dike at Gamboa, which separates the waters of the Chagres from Culebra Cut. These tracks are now being regraded and ballasted.

Each southbound train will back across the dike at Gamboa and over a cross-over to the southbound track of the present main line. It will stop at Matachin and then back into Gorgona, 1.41 miles north, after which it will go ahead on the southbound track on the way to Panama. A northbound train will stop at Matachin, continue to Gorgona, and will then back along the northbound track to Gamboa Junction, whence it will go ahead toward Gatun. Such switching necessitates additional travel for through passengers; the distance from Gorgona to Gatun by the relocated line is 33.17 miles, or 4.90 miles more than by the present route. This will increase the schedule 10 minutes, making the time to cross from Colon to Panama, 2 hours and 25 minutes. Fares will be based on the actual distance traveled except that no additional charge will be made on fares between stations north of Matachin and stations south of Matachin, for the movement between Matachin and Gorgona.

For the present the only regular stop on this section of the relocated line will be at Monte Lirio, 8.02 miles south of Gatun, where the railroad crosses the Gatun River, though flag stations may be determined on later. A station is being constructed at Monte Lirio out of materials from the stations at Lion Hill and San Pablo, removed from the present line. Other stations to be abandoned are Bohio, Frijoles, Tabernilla, and Mamei.

First-aid Packets.

The Sanitary Department is issuing first-aid packets to be placed on all locomotives, steamshovels, dredges, cranes, and boats of the Commission and the Panama railroad. Each packet is of the type provided for knapsacks in the United States Army, and contains, within a waterproof wrapper, 2 compresses of antiseptic gauze, 2 small bandages of antiseptic gauze, 2 safety pins, sterilized, and a triangular bandage by means of which a compress may be held in place on the head or any portion of the trunk or limbs. The weight of the packet is a few ounces and its dimensions are 4 by $2\frac{1}{2}$ by $1\frac{1}{2}$ inches, making it pocket-size.

Pedro Miguel Dam.

In the construction of the dam at Pedro Miguel, between the lock and Cerro Luisa, to the west, the rock fill for the south toe has been brought to full height, 85 feet above sealevel, and the first trainload of selected clay for the core was dumped along the inner side of this toe on January 26. During the last dry season the core for the eastern half of the dam was laid to within about 10 feet of its final height. Since the first of January a trench, twenty feet wide, has been cut through the natural soil to rock, along the center line from the west end. Puddling selected material in this pit is designed to make a firm and impervious core. Clay will be dumped from the toes and washed to the center by jets from hose. For the work of placing spoil there is a straight track on the south toe from which Lidgerwood flat cars are unloaded. On the north toe Western dump cars are now used but in a short time the toe will be so widened that a straight track may be laid.

In order that this material may join closely with the portions of core which have already been placed, the surface of the latter is being raked of swamp grass and plowed and will later be harrowed and raked, to make it porous and to remove matter, which by decaying would tend to make the core unfirm. Since being laid, a year ago, the clay has become so hard that four mules are required to draw a plow through it.

North Approach to Gatun Locks.

The cofferdam across the lower end of Gatun Locks will be tested this week, when water will be pumped into the space between it and the hill which lies just north of the lock site, where the approach and wing walls will extend. When the dam has been shown to be watertight, two pipeline suction dredges will make their way toward the locks and begin excavating for the approach and wing walls. The spoil will be piped into a lagoon east of the main line of the Panama railroad, levees for which are now being constructed with spoil from the steamshovels at Mindi. After the suction dredges have removed about 750,000 cubic yards of earth at the sites for the walls, a dipper dredge will be employed for excavating rock down to the foundation level.

A pit is being made alongside the canal into which this rock will be dumped. This is the most economical means of disposing of it, because the work will be done while the old line of the railway from Mindi to Gatun Dam is still in operation and this makes it impossible to tow spoil out to sea. The pit, which is being excavated by the 18-inch suction dredge *No. 4*, will be about 350 feet long, 120 feet broad and 30 feet deep. When the pit is finished, *No. 4* will proceed to excavating for the walls, in which it will be assisted by the 20-inch suction dredge *Sandpiper*.

Anchorage Basin at Gatun.

It has been determined that the embankment across the anchorage basin in Gatun Lake at the south end of the Gatun Locks, on which the present line of the Panama railroad runs, will be removed down to 35 feet above sealevel during the present dry season, as soon as the railroad begins to use the relocated line. This will involve an excavation of about 25,000 cubic yards. It is probable that the spoil will be dumped upon the Gatun Dam.

Sills for Emergency Dams.

The sill for the emergency dam in the east chamber of the upper lock at Miraflores has been completed and work is advancing on the corresponding sill in the west chamber. At Pedro Miguel the reinforcement for both sills has been placed and the laying of concrete will proceed immediately. In the construction of one of these sills a pit 55 feet wide and extending the full distance of 110 feet between walls is excavated to the depth of $11\frac{1}{3}$ feet below the level of the approach floor. The sill is laid in the lower side of this pit for a width of 25 feet and rising 24 inches above the surface of the floor. About 1,200 cubic yards of concrete are required. The reinforcement consists of two rows, about 8 feet apart, of

NOTES OF PROGRESS.

(Continued.)

70-pound steel rails, set on one-foot centers and inclined toward the lower end of the lock at an angle of 60 degrees with the horizontal. On the upper side of the sill are 12 steel castings for the ends of the girders which will be let down from the cantilever bridge, which will be swung over the chamber from the side wall when it is desired to use the emergency dam. Each recess is 16 inches wide, with a mouth flaring to a width of 40 inches, to guide the swinging girder into the recess. Scope for the swing of the girders is afforded by the open portion of the pit above the sill, 30 feet wide. Over this a thin concrete floor is laid, and in addition to affording play for the girders, it provides a settling basin for silt.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 77 per cent completed, 174,333 cubic yards, out of a total of 225,000, having been placed at the close of work on January 27. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked	No. Mixers.
January 22	440	16.00	2
January 23	540	16.00	2
January 24	348	16.00	2
January 25	576	16.00	2
January 26	572	16.00	2
January 27	552	16.00	2
Total	3,028	96.00	2
Previously reported	171,305		
Grand total	174,333		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending January 27, follows:

DATE.	Hours worked.	Cubic Yards.
January 22	2.53	1,358
January 23	3.08	1,687
January 24	4.24	1,939
January 25	3.29	1,620
January 26	4.15	1,894
January 27	4.22	1,992
Total	22.31	10,490

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending January 27, follows:

DATE.	Hours worked.	Cubic Yards.
January 22	7.00	2,511
January 23	6.25	2,260
January 24	6.10	2,181
January 25	4.10	1,755
January 26	5.45	1,457
January 27	5.40	1,917
Total	35.10	12,081

American Institute of Electrical Engineers.

A party of members of The American Institute of Electrical Engineers and their friends, 110 persons in all, arrived on the Isthmus on January 25, for an inspection of the Canal work. They will return to the States on February 1. On Saturday night, January 27, they were guests of the Tivoli Club at the fortnightly dance, and on Monday night the visitors gave a dance at the Hotel Tivoli to their hosts of the 27th. Resolutions were adopted at a meeting of the members of the Institute expressing appreciation of the Canal work, and of Canal Zone hospitality.

Postal Savings System

In accordance with Executive Order of September 8, 1911, postal savings certificates will be on sale, beginning February 1, at the following Canal Zone post offices: Ancon, Balboa, Bas Obispo, Corozal, Cristobal, Cristobal A (Porto Bello), Cristobal B (Toro Point), Culebra, Empire, Gatun, Gorgona, Las Cascadas, Matachin, Miraflores, Paraiso and Pedro Miguel. The rules governing the system were published in THE CANAL RECORD of November 22, 1911.

CONCRETE WORK IN THE LOCKS.

Over 77 per cent of the concrete for the locks is in place, the amount at the close of work on January 27, being 3,237,022 cubic yards, out of a total of approximately 4,199,400. A total of 20,281½ cubic yards of concrete was laid in the locks during the week ending January 27.

GATUN LOCKS.

Over 89 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on January 27 being 1,796,746 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending January 27, and of the total, follows; and similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue. The construction plant works 12 hours, daily, and the auxiliary plant 9 hours.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
January 22	954	19.04	7	208	2.40	2	....	1,200
January 23	578	10.30	3	218	2.40	2	....	854
January 24	768	13.04	5	326	4.40	2	....	1,132½
January 25	676	10.57	5	118	1.40	2	....	839
January 26	1,134	19.09	3	314	4.40	2	....	1,470
January 27	756	18.56	4	116	1.40	2	....	927
*Portable mixers	....	....	......	256½	....	......	....	....
Total	4,866	91.40	4.5	1,556½	18.00	2	....	6,422½
Previously reported	....	....	......	....	....	......	....	1,790,323½
Grand total	....	....	......	....	....	......	....	1,796,746

*The 256½ yards shown for the portable mixers are reinforced concrete and were placed on the following days: January 22nd, 38; January 23rd, 58; January 24th, 38½; January 25th, 45; January 26th, 22; January 27th, 55.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 95 per cent completed, 803,361 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on January 27. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
January 22	364	12.00	2	233	25.00	4	....	597
January 23	332	10.00	2	273	22.00	3	....	605
January 24	444	14.00	2	175	18.25	3	....	639
January 25	420	12.50	2	229	19.33	3	....	649
January 26	436	13.00	2	125	10.00	2	....	561
January 27	506	15.00	2	153	15.00	3	....	659
Total	2,502	76.50	2	1,208	109.58	3	....	3,710
Previously reported	....	....	......	....	....	......	4,423	799,651
Grand total	....	....	......	....	....	......	4,423	803,361

MIRAFLORES LOCKS.

Over 46 per cent of the concrete for the system of two twin locks at Miraflores was in place on January 27, the total amount on that date being 637,195 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.	*Cu. Yds.*								*Cu. Yds.*	*Cu. Yds.*
Jan. 22	1,272	31.92	6	....	....	......	37	2.00	1	....	1,309
Jan. 23	1,678	38.42	6	....	....	......	113	5.00	1	....	1,791
Jan. 24	1,376	30.25	6	90	1.42	2	192	11.00	2	....	1,658
Jan. 25	1,408	33.50	6	206	3.12	2	144	7.50	1	....	1,758
Jan. 26	1,158	27.67	6	216	3.33	1	227	11.50	2	....	1,601
Jan. 27	1,490	26.00	5	248	3.83	1	294	19.00	3	....	2,032
Total	8,382	187.76	5.83	760	11.70	1	1,007	56.00	1.67	....	10,149
Previously reported	....	....	......	....	....	......	....	....	......	3,693	627,046
Grand total	....	....	......	....	....	......	....	....	......	3,693	637,195

FEDERATED WOMEN'S CLUBS.

Annual Meeting at Cristobal and Election of Officers.

The fifth annual meeting of the Canal Zone Federation of Women's Clubs was held at Cristobal on Saturday, January 27. The business meeting convened in the entertainment hall of the Commission clubhouse at 9.30 o'clock. The hall had been attractively decorated by the social committee of the Cristobal Woman's Club, a variety of tropical flowers, palms and ferns being used, while at the end two American flags were displayed, and over the stage hung the green and gold banner of the Canal Zone Federation.

Mrs. Carl H. Elliott, president of the Cristobal Club, welcomed the delegates.

The president of the Federation in her address stated that in view of the decrease in the number of federated clubs, owing to the drawing to a close of the Canal construction, it would be well to look into the question of the discontinuance of the federation, and urged that this and other questions be given serious consideration. It subsequently developed however, in the enthusiastic spirit with which plans for future activity were made, that the time for the consideration of disbanding the federation had not arrived. Among the reports of the committees the two most important were that of the librarian and custodian, and that of the chairman of the health committee of the Cristobal Woman's Club, which was made by request.

The librarian stated that 50 books of the Federation juvenile library had been lent to Gorgona for several months, where they had been circulated among the school children; a portion of the library had been lent to the woman's club at Gatun, and 150 books are at present in circulation in the Cristobal Union Sunday School. The Federation's pictures have been exhibited in Paraiso, Gorgona, and Cristobal; there was also a loan exhibit extending over a period of two weeks in the Gorgona public school in May.

The chairman of the health committee of the Cristobal club gave a detailed report of the free health lectures in Colon. The primary object of this work was to institute an anti-tuberculosis campaign among the poor people of the city, by means of free illustrated lectures, the circulation of literature and the posting of bulletins giving simple rules for health and sanitation in the hall-ways and alleys in the crowded districts of the city. In this connection lectures on related subjects are also given, such as the transmission of disease by insects, and general house sanitation. The Federation assured the committee of its cooperation and means will be taken whereby the work can be brought into the native villages in the Canal Zone.

The reports of the club presidents showed good work along civic, philanthropic and social lines—playgrounds established, sanitary fountains in prospect, charity balls given, and Christmas entertainments planned and carried out, being among the prominent features. The questions regarding the common drinking cup, and the administration and conservation of the public playgrounds, "rational recreation centers," were discussed. In response to a demand for Federation pins, the delegates authorized the purchase of an additional supply. These will be ordered at once and requests for the same may be filed with the treasurer at any time. Members are also urged to purchase General Federation pins; orders for these may also be placed with the treasurer.

The Federation pledged itself to raise $300 for one year's schooling in an institution for a blind boy, fourteen years old, who is at present in Colon Hospital. The boy is bright and promising, willing and eager to learn, and to become self-supporting. The ultimate object is that the boy may be trained in some work whereby he will be independent, and may return to the Isthmus to teach and work among the blind of his own people. The money is to be raised by the first of April, in order that the boy may be placed in the school at the opening of the next school year. The required bond, to enable him to enter the United States, and his clothing have been assured.

A recess was taken at 11.30 for lunch, which was served at the Washington Hotel.

The hall was filled for the afternoon session which convened at 2.30 o'clock. Besides the Federation women, there were present members of 15 Canal Zone organizations of women, representing church societies and guilds, auxiliaries, and secret orders. The Little Workers, Gorgona's club of girls, attended in a body, and the staff of the Canal Zone Public Schools, including the supervisors, was present.

Among the speakers was Dr. Caroline Rosenberg, representing the California Woman's Club. The following was the program:

President's Address	Miss Beattie
Greeting from California	Dr. Caroline Rosenberg
Cecelian Quartet of Cristobal Club:	
(*a*) Nights of Music	Denza
(*b*) Scheiden ohne Leiden	Dvorak
Address	Judge Thomas E. Brown, Jr.
"Progress in the Prevention of Crime."	
Piano Solo	Mrs. Ullrich
(*a*) Traumerei	Schumann
(*b*) Mazurka	Godard
Address	Mr. Frank A. Gause
"Literature as a Factor in Education."	
Cecelian Quartet of Cristobal Club:	
(*a*) Barcarolle	Offenbach
(*b*) O'er the Sands	Abt

Refreshments were served by the house committee of the Cristobal Woman's Club. The following officers were elected for the ensuing year: President, Miss J. Macklin Beattie; first vice-president, Mrs. E. H. Colip; second vice-president, Mrs. Charles H. Stoddard; third vice-president, Mrs. A. O. Herman; recording secretary, Mrs. Carl H. Elliott; corresponding and General Federation secretary, Mrs. Thomas E. Brown, Jr.; treasurer, Mrs. J. E. Westberg; auditor, Mrs. S. E. Calvit; librarian and custodian, Mrs. M. E. Smith.

Ancon Study Club.

The Ancon Study Club, an organization of women, was organized at Ancon on Wednesday afternoon, January 24. The meetings will be held weekly on Thursday afternoons at Ancon Hall at 3 o'clock. In connection with the work of the club, the library, formerly the property of the Ancon Library Association, has been taken over and will be placed in circulation among the members, or by special arrangement, among non-members. Mrs. H. W. Shick of Corozal was elected secretary-treasurer, and Mrs. Mark White of Ancon, librarian. The secretary is empowered to call the meetings to order, and to call special meetings, upon request of the members. Each meeting will be presided over by the hostess for the day, who will arrange the work and outline the program for the following meeting, assigning the members such papers as are to be prepared in connection with the subject. For the first month, the study will be Panama. As outlined, the work begins with the outline of the early history, and, continuing, reviews the French occupation, the beginning of the American occupation, and the Canal up to date. A history of the Panama railroad will also be taken up for one afternoon. The next meeting of the club will be at Ancon Hall on Thursday, February 1, at 3 p. m.

Kangaroo Memorial Services.

The annual memorial services of the Independent Order of Panamanian Kangaroos will be held in the National Theatre in Panama on Sunday, February 4, at 3 p. m. All Kangaroos and the public are invited to attend. A special train will be run, leaving Colon at 12.30 p. m. It will arrive in Panama at 2.15; returning, it will leave Panama at 6.30 and arrive in Colon at 8.10 p. m. No transportation will be required on this train into Panama; return tickets will be given out at the theatre after the services.

Steam Shovel Men.

The January meeting of Panama Local No. 5 of Steam Shovel Men has been postponed to Sunday, February 4, in order to receive the report of the delegate to the annual convention in Chicago. The meeting will be held in the annex to the Administration Building at Culebra.

B. P. O. E.

All Elks are requested to aid in an effort to complete a list of local members by sending at once name and number to the undersigned, indicating also names of any known members now removed from the Isthmus.

GERALD D. BLISS, Culebra.

Changes in British Consular Service.

The British Vice-Consulate at Colon has been raised to the rank of Consulate, with jurisdiction in the Republic of Panama and the Canal Zone, and the former vice-consul, Mr. Harry Owen Chalkley, has been made consul. A vice-consulate will be maintained in the British legation at Panama, with Mr. D. F. S. Filliter in charge; and the whole service in Panama will be under the direct supervision of the British Minister, Sir Claude Coventry Mallet.

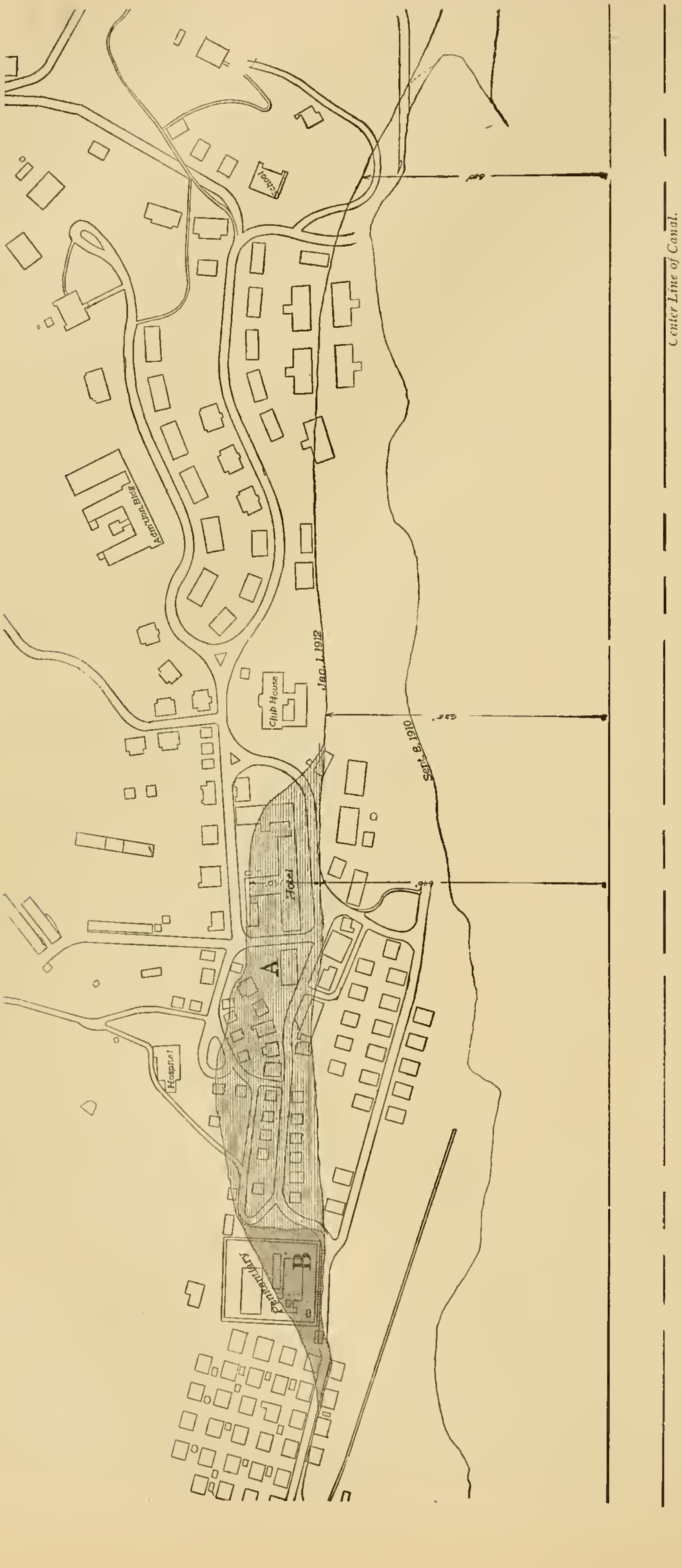
St. Louis Business Men's League.

A party composed of 126 members of the St. Louis Business Men's League and members of their families, in all about 160 persons, will arrive on the Isthmus on February 15, by way of New Orleans. They will remain here one week.

PERSONAL.

Col. Geo. W. Goethals sailed on the *Cristobal* on January 28 for New York. He is going to Washington on official business and expects to be absent about three weeks.

William Barclay Parsons, who was a member of the first Isthmian Canal Commission in 1904, and of the International Board of Consulting Engineers on the Panama Canal, 1905-1906, arrived on the Isthmus on January 27, accompanied by Mrs. Parsons and a party of friends, and sailed for Jamaica on January 30.



CULEBRA SLIDE—Lines showing Breaking Off on West Side of Culebra Cut Since 1910.

(A)—Area about 4 acres. Excavation to be made above elevation 280 about 230,000 cubic yards. Buildings removed. (B)—Area about one acre.

CULEBRA SLIDE.

Gradual Encroachment Upon the West Bank on which Culebra Village is Situated.

Plans for work on the slide at Culebra during the present dry season include a continuation of excavation from the top of the bank, with the purpose of lightening the mass that shows signs of having broken away from the main hill, and thus lessening its tendency to move of its own weight into the prism of the canal.

To do this the area on which the Culebra hotel was formerly situated, and that where the lodge hall and church and a number of small family quarters now stand, must be excavated In all, twenty-nine buildings will be removed within the ensuing two months to make way for the steamshovels. The gradual encroachment of the slides upon the side of the hill, and the number of buildings it has been necessary to remove on this account, or in order to make way for steamshovels, are indicated on the map published herewith. Prior to 1905 the main line of the Panama railroad ran between the old village of Culebra and the line of the canal, crossed the canal at the south end of Gold Hill, between miles 36 and 37, and ran along the east bank into Paraiso. The construction of the canal necessitated the removal of the railroad from the old location, east of the village, to behind the hill on the west. In 1906 the headquarters of the work were moved from Ancon to Culebra, and the new village of Culebra was constructed on the east slope of the hill, as the old camp had been, but at such a distance from the Cut as to be apparently safe from danger of sliding in. Part of this location has already disappeared on the slide. The old line of the railroad was maintained practically intact until 1909, however, when the slides began seriously to interfere with it.

The section it is now intended to excavate includes all that between the penitentiary on the south, the Commission Clubhouse on the north, and on the west the road that runs from the American settlement at Culebra to the labor camp, known as Rio Grande, an area of about 4 acres. In addition to this area it is probable that the site of the penitentiary and a portion of the labor camp of Rio Grande will need to be removed at a later date. Along the edge of Zion Hill, back of the penitentiary, there is a long crack in the earth that is typical of the breaks occurring in this class of slide. In some parts it is from six inches to a foot wide. It is apparent that the toe of the hill has broken away from the main mass, and the depth of the break can only be conjectured; at places it can be sounded to twenty feet below the surface.

In the French canal days one of the springs that supplied water to the labor camp emptied into a cistern near the present penitentiary, and a tiny stream of water now runs out of the ground along the line of the crack. If this spring is local it will have little effect on the movement of the detached mass, but if it represents the collection of a number of smaller streams from various parts of the hillside, it is probable that the movement will be accelerated by the slickening of the mass along the line of the break. The material along the break appears to be soft rock, of the kind that becomes "greasy" when in contact with water. In order to determine whether this water was not largely leakage from the reservoir on top of the hill, the reservoir was emptied some time ago, but during the time that it was empty there was little if any lessening of the volume of the stream, indicating that the water comes from a spring or springs in the hill.

There are cracks in the ground underneath the buildings of the penitentiary, but it is not proposed to vacate and demolish the buildings until this becomes absolutely necessary. They are in no danger because they stand well back from the edge of the slide. It is expected also that it will be necessary to move part of the labor camp of Rio Grande because the limits of the slide include the northern end of this settlement. This will likewise be work for some future time, because there is no immediate danger of the bank in this section settling enough to make the buildings insecure

The action of the slides in front of the village of Culebra has been gradual, and has developed during the past five years. Early in the excavation it became evident that the theoretical slopes of 3 on 2 above the 40-foot berm at the 95-foot level, and 2 on 3 slopes above the 40-foot berms at the 200 to 230-foot levels, could not be maintained. At first the method pursued was to dig in the prism of the Canal, and allow the material from the banks to slide in, after which it would be excavated. The continual pushing out of line of the railway tracks and filling of the drainage ditch by this movement led to a modification of this method, and the adoption of the plan of lightening the slide by taking as much material as possible from the top of it. This method has undoubtedly retarded the movement, and it will probably result in saving a considerable amount of excavation. What the final slopes here will be cannot be determined accurately at this time, but it is probable that they will be steeper than 1 on 3.

It is estimated that the total amount of material removed from the slides on the west bank at Culebra is 4,769,957 cubic yards; and that there still remain within the area 2,335,905 cubic yards, most of which may require moving. In all the slides in Culebra Cut, there remain to be excavated about 3,696,000 cubic yards, or about one-fourth of the total remaining excavation for the Cut, which on January 1, 1912, was 14,941,181 cubic yards.

Postal Business and Canal Zone Revenues.

During the month of December there were sold 21,269 money orders amounting to $427,483.48. Of this amount, $328,981.20 was issued payable in the United States, $97,800.32 in the Canal Zone, $600.71 in Martinique, and $101.25 in Costa Rica. The fees amount to $2,051.27, and the amount paid and repaid to $113,392.71.

Postal sales during the month amounted to $10,494.80, and newspaper postage to $20.04.

Revenue collections during the month were as follows:

Bicycle and chauffeur licenses	$ 27.00
Distillation	278.00
Escheated estates	2.00
Insurance collections	50.00
Motor vehicle licenses	92.00
Retail liquor licenses	26,400.00
Steamboat inspection	15.15
Taxes, licenses, etc	12,970.45
Total	$39,835.30

The Pacific Division sand service will furnish 400 cubic yards of sand a day to the Atlantic Division for use at Gatun from this time until April 1, 1912.

CANAL ZONE CENSUS.

Regulations Governing the Work—Enumeration to Begin This Week.

The second census of the Canal Zone will be begun on February 1, when 30 enumerators acting under the direction of four supervisors will begin the work of enumeration. This will be carried on in four districts, corresponding with the administration districts, and the work in each district will be done under direction of a supervisor, who in turn will be under the supervision of two experts from the Bureau of the Census at Washington, and the Assistant Chief Clerk of the Department of Civil Administration. All but two of the enumerators have such facility in speaking Spanish as will enable them to ask questions of practically all the people in their districts, and a few of them speak French, German, or Italian. The Executive Order and Official Circular governing the Census follow:

EXECUTIVE ORDER.

By authority invested in me by law, I establish the following order for the Canal Zone:

Section 1. A census of the Canal Zone, Isthmus of Panama, shall be taken by the Department of Civil Administration of the Isthmian Canal Commission not later than April 30, 1912, under such rules and regulations in conformity with this order as may be prescribed by the Head of Department of Civil Administration with the approval of the Chairman of the Isthmian Canal Commission.

Section 2. The census shall embrace inquiries relating to population, and shall include for each inhabitant the name, location, sex, color, age, conjugal condition, place of birth, citizenship, length of residence in the Canal Zone, occupation, whether or not an employe, and if an employe of the Isthmian Canal Commission, the Panama Railroad Company, the United States Government, or of any arm or branch thereof this fact to be shown, together with metal check number if an employe of the Isthmian Canal Commission or the Panama Railroad Company, school attendance, literacy, the language spoken, whether blind, deaf and dumb, insane, or imbecile, and any other information which, under the rules and regulations referred to in Section 1, may be required.

Section 3. It shall be the duty of each enumerator to visit personally each dwelling house in his subdivision, and each family therein, and each individual living out of a family in any place of abode, and by inquiry made of the head of each family, or of the member thereof deemed most competent and trustworthy, or of such individual living out of a family, to obtain each and every item of information and all particulars required by this Order; and in case no persons shall be found at the usual place of abode of such family, or individual living out of a family, competent to answer the inquiries made in compliance with the requirements of this Order, then it shall be lawful for the enumerator to obtain the required information as nearly as may be practicable from families or persons living in the neighborhood of such place of abode. It shall be the duty also of each enumerator to forward the original schedules, properly filled out and duly certified, to the supervisor or other chief census officer of his district as his returns under the provisions of this Order; and in the event of discrepancies or deficiencies being discovered in these schedules he shall use all diligence in correcting or supplying the same.

Section 4. The compensation of enumerators and other persons engaged in taking the census shall be fixed by the Head of Department of Civil Administration, subject to the approval of the Chairman of the Isthmian Canal Commission.

Section 5. Every supervisor, supervisor's clerk, enumerator, interpreter, special agent, or other employe shall take and subscribe to an oath or affirmation to faithfully execute the duties imposed by his employment.

Section 6. Any supervisor, supervisor's clerk, enumerator, interpreter, special agent, or other employe, who, having taken and subscribed to the oath of office required by this Order, shall, without justifiable cause, neglect or refuse to perform the duties enjoined on him by this Order, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not exceeding five hundred dollars; or if he shall, without authority of the officer in charge of the census, publish or communicate any information coming into his possession by reason of his employment under the provisions of this Order, he shall be guilty of a misdemeanor and shall upon conviction thereof be fined not to exceed one thousand dollars, or be imprisoned not to exceed two years, or both so fined and imprisoned, in the discretion of the court; or if he shall wilfully and knowingly swear to or affirm falsely, he shall be deemed guilty of perjury, and upon conviction thereof shall be imprisoned not exceeding five years and be fined not exceeding two thousand dollars; or if he shall wilfully and knowingly make a false certificate or a fictitious return, he shall be guilty of a misdemeanor, and upon conviction of either of the last named offenses he shall be fined not exceeding two thousand dollars and be imprisoned not exceeding five years; or if any person who is or has been an enumerator shall knowingly or wilfully furnish, or caused to be furnished, directly or indirectly, to the officer in charge of the census, or to any supervisor of the census, any false statements or false information with reference to any inquiry for which he was authorized and required to collect information, he shall be guilty of a misdemeanor, and upon conviction therof shall be fined not exceeding two thousand dollars and be imprisoned not exceeding five years.

Section 7. It shall be the duty of all persons over twenty-one years of age when requested by the officer in charge of the census, or by any supervisor, or enumerator acting under the instructions of the said officer in charge of the census, to answer correctly, to the best of their knowledge, all questions on the census schedules applying to themselves and to the family to which they belong or are related; and any person over twenty-one years of age who, under the conditions hereinbebefore stated, shall refuse or wilfully neglect to answer any of these questions, or shall wilfully give answers that are false, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not exceeding one hundred dollars.

And it shall be the duty of every owner, proprietor, manager, superintendent, or agent of a hotel, apartment house, boarding or lodging house, tenement or other building, when requested by the officer in charge of the census, or by any supervisor, or enumerator, acting under the instructions of the said officer in charge of the census, to furnish the names of the occupants of said hotel, apartment house, boarding or lodging house, tenement, or other building, and to give thereto free ingress and egress to any duly accredited supervisor or enumerator, so as to permit of the collection of statistics for census purposes including the proper and correct eumeration of all persons having their usual place of abode in said hotel, apartment house, boarding or lodging house, tenement, or other building; and any owner, proprietor, manager, superintendent, or agent of a hotel, apartment house, boarding or lodging house, tenement, or other building who shall refuse or wilfully neglect to give such information or assistance under the conditions hereinbefore stated shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not exceeding five hundred dollars.

Section 8. The circuit courts of the respective circuits shall have jurisdiction of the offenses herein enumerated.

Section 9. This Order shall take effect on this date.

WM. H. TAFT.

THE WHITE HOUSE,
January 12, 1912.

OFFICIAL CIRCULAR.

A census of all persons residing in the Canal Zone or employed by the Isthmian Canal Commission or the Panama Railroad in the Canal Zone, but residing outside the Canal Zone, or employed by the Isthmian Canal Commission or the Panama Railroad Company at Porto Bello, Nombre de Dios, Chame, and other like points in Isthmian territory, will be taken by the Department of Civil Administration as of February 1, 1912.

The purpose of the census is to secure general statistical information regarding the population of the Canal Zone, and replies are required from individuals only in order to permit the compilation of such general statistics. The census has nothing to do with taxation, with army or jury service, with the compulsion of school attendance, with the regulation of immigration, or with the enforcement of any law or ordinance, nor can any person be harmed in any way by furnishing the information required. There need be no fear that any disclosure will be made regarding any individual person or his affairs. All persons are therefore urged to answer promptly, completely, and accurately all inquiries addressed to them by the enumerators or other employes connected with the census work, and thereby to contribute their share toward making this necessary public undertaking a success.

In order to secure the proper enumeration of all persons within the classes above indicated, there has been issued by the President of the United States the Executive Order published above. Any violation thereof will subject the offender to the penalties therein provided.

Ancon, Canal Zone, January 16, 1912.

M. H. THATCHER,
Head of Department of Civil Administration.

Approved:
GEO. W. GOETHALS,
Chairman and Chief Engineer.

CANAL ZONE TRAILS.

Contracts for Clearing Native Thoroughfares.

Award has been made to Charles Alberts of a contract for clearing trails in the Canal Zone south of Gorgona for $3,780, which is an average of about $30 an acre. The contract provides that the trails be cleared to a width of 20 feet of all brush, cane, grass, trees, or other growth, not exceeding one foot in diameter, and the material cut must be burned or cleared from the trail. Trees not under 3 inches in diameter and not over one foot must be removed to a height not exceeding one foot above the ground, and all growth of less than 3 inches in diameter must be removed to a height of not more than two inches above the ground. The trails to be cleared are the following.

Panama-Cruces trail, a distance of approximately 18 miles.

Corozal-Cruces trail from a point near Corozal to the Cruces trail, a distance of approximately 2 miles.

Pedro Miguel-Cruces trail from Pedro Miguel to a point on the Cruces trail, a distance of approximately 3 miles.

Empire-Cruces trail from Empire to a point on the Cruces trail, a distance of approximately 5 miles.

Empire-Maria Eugenia trail, through Calle Boca, a distance of approximately 5 miles.

Arraijan-Rio Grande trail from the Canal Zone boundary east of the village of Arraijan to a point on the Panama railroad 600 feet below the Rio Grande dam, a distance of about seven miles.

Arraijan-Paraiso trail from the Canal Zone boundary east of the village of Arraijan to a point on the Panama railroad north of trestle crossing the Canal, a distance of about six miles.

Arraijan-Cochinito Trail from the Canal Zone boundary south of Arraijan to Cochinito village, a distance of about six miles, following the route of the old trail through the land leased by Dr. Rafael Neira.

In the clearing, the locations which have been locally determined by previous usage by the population in their vicinity will be followed upon designation by the Superintendent of Public Works.

Mr. Alberts has also been awarded a contract for clearing the trail from Cruces to Gamboa, a distance of approximately 2 miles, for $159.00, and the trail from Mount Hope to Majagual, a distance of approximately 8 miles, for $79.50 a mile.

A revocable license has been granted to the Panama-American Corporation of the city of Panama to run a power and telephone line through the Canal Zone from the city to the residences on the Sabanas.

Material In Towing Locomotives.

The article in THE CANAL RECORD of December 27, regarding the award of a contract for the towing locomotives for the locks, was in error in that it stated—"The award was made on the regular bid, in which carbon steel was specified, the optional bid being for vanadium steel." The specifications called for bids with vanadium steel and with carbon steel, and the award was made for carbon steel because it was cheaper and satisfactory for the purpose intended.

Rainfall from January 1 to 27, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Station—	*Ins.*		*Ins.*
Ancon	T	6	T
Balboa	0	....	0
*Miraflores	0	....	0
Pedro Miguel	0	....	0
Rio Grande	.03	19	.03
Central Section—			
Culebra	.02	19	.04
*Camacho	.02	15	.04
Empire	.01	19	.01
Gamboa	.02	†14	.06
*Juan Mina	.08	15	.15
Alhajuela	.06	19	.08
*El Vigia	.05	5	.08
*Gorgona	.20	19	.20
*New Frijoles	.10	19	.60
*Monte Lirio	.52	18	2.05
Atlantic Section—			
Gatun	.57	19	.91
*Brazos Brook	.11	21	.53
Colon	.04	18	.16
Porto Bello	.19	20	‡.59

*Standard Rain Gauge—readings at 5 p. m. daily. Automatic Rain Gauge at unstarred stations—Values midnight to midnight.

†Same amount recorded on other dates.

‡To 5 p. m., January 26.

OFFICIAL CIRCULARS.

Acting Chairman and Chief Engineer.

CULEBRA, C. Z., January 29, 1911.

CIRCULAR No. 430:

During my absence from the Isthmus, Col. H. F. Hodges will be in charge of the work as Acting Chairman and Chief Engineer, effective January 27, 1912.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Third Division of Chief Engineer's Office Abolished.

CULEBRA, C. Z., January 24, 1912.

CIRCULAR No. 183-R:

Effective this date, the Third Division of the Office of the Chief Engineer, heretofore in charge of Mr. C. M. Saville, Assistant Engineer, resigned, is abolished, and the work of that division is hereby assigned to the Second Division, under Civil Engineer H. H. Rousseau, U. S. Navy, Assistant to the Chief Engineer.

GEO. W. GOETHALS,
Chairman and Cheif Engineer.

Locomotive Engine Oil on Crank Pin Bearings.

CULEBRA, C. Z., January 23, 1912.

CIRCULAR No. 314-H:

In general, locomotive engine oil (I. C. C. No. 5) will be used hereafter on all locomotive crank pin bearings except such as are equipped for the use of grease (I. C. C. No. 24).

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Married.

MEATON-ROCHE—On January 21, at Ancon, Gertrude Virginia Roche, of Brooklyn, N. Y., to Ernest Meaton of England, N. Y., the Rev. Father Daniel Quijano officiating. Canal Zone residence, Empire.

WATSON-HICKS—On January 15, at St. Luke's Church, Ancon, Rachel V. Hicks, of Roslyn, N. Y., to Dr. Rudolph B. Watson, of Tennessee, the Rev. H. A. Brown officiating.

Annual Rainfall for Three Years.

STATION.	1909	1910	1911	Station Average	Years of Record	Rai'y days, 1911
Pacific Sec.–	*Ins.*	*Ins.*	*Ins.*	*Ins.*		
Ancon	83.91	75.78	64.10	71.23	14	170
Balboa	93.06	75.30	63.73	70.53	13	158
Miraflores	119.53	102.57	61.97	92.18	3	169
P. Miguel	110.57	96.36	64.12	87.13	4	174
Rio Grande	107.86	104.15	82.11	90.78	7	189
Central Sec.–						
Culebra	102.03	103.37	74.84	90.14	21	189
Camacho	116.31	117.48	84.72	97.10	5	185
Empire	97.15	90.66	66.70	82.18	7	195
Gamboa	122.11	115.99	70.67	92.98	29	205
Alhajuela	152.04	131.01	90.05	105.88	12	191
El Vigia	147.61*	126.01	82.64	115.89	3	192
Gorgona	....	111.34	76.51	98.97	7	176
San Pablo	118.95	133.34	58.56	98.43	4	216
Tabernilla	131.08	126.64	62.51	102.90	4	227
Bohio	151.69	160.54	77.18	128.72	17	250
Trinidad	147.81	154.05	91.53	125.46	4	241
M. Lirio	153.39	179.73	113.27	142.11	4	304
Atlantic Sec–						
Gatun	164.19	156.21	99.28	134.33	7	262
Brazos B.	170.50	155.19	116.08	141.00	5	277
Colon	183.41	149.94	112.75	129.59	41	253
P. Bello	237.28	170.12	148.94	173.02	4	267

*Gauge washed away December 26: 5 days' record lost.

Stages of the Chagres.

Maximum heights of the Chagres River for two weeks ending midnight, Saturday, January 20 and January 27. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Jan. 14	125.4	91.8	44.5	15.4	15.4
Mon., Jan. 15	125.4	91.8	44.5	15.2	15.2
Tues., Jan. 16	125.4	91.8	44.5	15.0	15.0
Wed., Jan. 17	125.5	91.8	44.5	14.8	14.8
Thurs., Jan. 18	125.5	91.8	44.5	14.7	14.7
Fri., Jan. 19	125.5	91.8	44.5	14.6	14.6
Sat., Jan. 20	125.5	91.8	44.5	14.6	14.5
Sun. Jan. 21	125.4	91.8	44.4	14.4	14.4
Mon. Jan. 22	125.4	91.8	44.4	14.4	14.4
Tues. Jan. 23	125.4	91.8	44.4	14.2	14.2
Wed. Jan. 24	125.4	91.8	44.4	14.2	14.1
Thurs. Jan. 25	125.4	91.7	44.3	14.0	14.0
Fri. Jan. 26	125.4	91.8	44.4	14.0	14.0
Sat. Jan. 27	125.4	91.7	44.4	13.9	13.9
Height of low water to the nearest foot	125.0	92.0	44.0		

REVISED BASEBALL SCHEDULE.

DATE.	ANCON.	EMPIRE.	COLON.
December 31, 1911	Ancon–Empire		Com. Sub.–Tenth Inf.
January 1, 1912		Empire–Tenth Inf	Com. Sub.–Ancon
January 7	Ancon–Tenth Inf	Empire–Com. Sub	
January 14	Ancon–Tenth Inf		Com. Sub.–Empire
January 21	Empire–Ancon	Com. Sub.–Tenth Inf.	
January 28	Ancon–Com. Sub	Empire–Tenth Inf	
February 4	Ancon–Empire		Com. Sub.–Tenth Inf.
February 11		Empire–Tenth Inf	Com. Sub.–Ancon
February 18		Ancon–Tenth Inf	Empire–Com. Sub
February 22	Ancon–Tenth Inf		Com. Sub.–Empire
February 25	Empire–Ancon		Com. Sub.–Tenth Inf
March 3	Ancon–Com. Sub	Empire–Tenth Inf	
March 10	Ancon–Empire		Com. Sub.–Tenth Inf
March 17		Empire–Tenth Inf	Com. Sub.–Ancon
March 24	Ancon–Tenth Inf	Empire–Com. Sub	
March 31	Ancon–Tenth Inf		Com. Sub.–Empire
April 7		Empire–Ancon	Com. Sub.–Tenth Inf
April 14	Ancon–Com. Sub	Empire–Tenth Inf	
April 21	Ancon–Empire	Com. Sub.–Tenth Inf	
April 28		Empire–Tenth Inf	Com Sub.–Ancon
May 5	Ancon–Tenth Inf		Empire–Com. Sub
May 12	Ancon–Tenth Inf		Com. Sub.–Empire
May 19		Empire–Ancon	Com. Sub.–Tenth Inf
May 26	Ancon–Com. Sub	Empire–Tenth Inf	
May 30	Ancon–Empire		Com. Sub.–Tenth Inf
June 2		Empire–Tenth Inf	Com. Sub.–Ancon
June 9	Ancon–Tenth Inf	Empire–Com. Sub	
June 16		Ancon–Tenth Inf	Com. Sub.–Empire
June 23		Empire–Ancon	Com. Sub.–Tenth Inf
June 30	Ancon–Com. Sub	Empire–Tenth Inf	

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving picture entertainments for the week February 5 to 10, is as follows: Monday, Gatun; Tuesday, Gorgona; Wednesday, Cristobal; Thursday, Culebra; Friday, Corozal; Saturday, Empire.

COROZAL.

A debating society was organized at the clubhouse on Monday night, January 22. The officers are: President, Mr. Bennick; Vice-President, Mr. LeMire; Secretary, Miss Mosteller. A debate and other interesting parts of a program are being arranged for Monday night, February 5.

The handicap pool tournament was started Monday night. Twenty-two men have entered the tournament and will compete for the three prizes.

Over 300 people attended the entertainment given at the clubhouse Wednesday night, January 24. This date marked the first anniversary of the opening of the building by the Y. M. C. A. Moving pictures were shown, music was furnished by the 10th Infantry Orchestra and refreshments were served.

Two dozen new cues have been ordered for the pool and billiard room.

CULEBRA.

On February 14, a "Country School" program will be given at the clubhouse, to which all will be invited.

The following is the standing of the handicap chess tournament that started on Tuesday, January 23:

Name.	Won.	Lost.	Draw.
Bartlett	3	2	
Janney	3	2	
Newman	3	4	
Warner	2	0	
Stearns	2	1	
Dubois	2	1	1
Vogel	1	1	
Erickson	2	5	
Goodenow	1	3	
Wilson	0	0	1

The observation tower, which is being built back of the clubhouse and connected with it by a doorway, will be completed in a few days and the people along the Canal are invited to visit Culebra and get a good view of Culebra Cut and the slides.

The following are the high scores of the duck pin tournament during the week: Case, 101; Cornthwaite, 104; Hoffman, 122; Cushing, 100; Van Zandt, 102; Palmer, 110; Mengel, 100; Case, 120; Brown, 100; Wheeler, 108; Conlon, 103. The standing of the teams will appear in the next issue.

EMPIRE.

The "smoker" held on Friday, January 26, was attended by 350 men. The following program was given: Orchestral selections by the 10th Infantry Orchestra under the direction of Bandmaster Coe; vocal numbers by the Tropical Quartet—Messrs. Ross, Dickson, Kersey, Case; informal remarks by Messrs. T. L. Clear and A. B. Dickson; bass solo, Mr. Paul Case; contortions, Mr. Stapleton; balancing tricks, Mr. Tudor; magic, Messrs. Hill and Hall; dancing by Mr. Vetal; wrestling, Messrs. Greening and Luttrell. Refreshments were served.

The Culebra volley ball team defeated the Empire team on January 20 in three straight games, by the scores of 21-5; 21-1; 21-9. A return game will be played at Culebra during the coming week. This game is becoming more and more popular.

On January 27, the Empire volley ball team defeated the Gorgona team by the score of 35 to 22, twenty minute halves being played.

The Empire indoor baseball team defeated the Gorgona team on January 27 by a score of 18 to 12; referee, Mr. Hall.

The recent billiard tournament was won by J. C. Wood.

Considerable interest is being taken in inter-association pool and billiards. The Empire players are anxious to start a tournament with the other clubhouses.

GORGONA.

Sixty new library books have been received and will be placed in the library for use of members by the librarian, J. E. Carpenter.

Mr. Burnsee, checker champion of the Isthmus, will be the guest of the Gorgona Checker Club on February 10 and will play twenty-five games simultaneously.

Messrs. Booz, Hopkins and Woodworth furnished music for the Sunset Sing last Sunday. Fifty-seven were present. Next Sunday night, February 4, there will be a duet by Miss Emma Steincross and Mrs. J. B. March. Singing will start at 7 p. m. All are invited to come and participate.

The Young People's Bible Class will hold a special meeting at the Y. M. C. A. on Friday night at 7 p. m. Mr. Carl Moyer has been elected secretary and treasurer.

Outdoor track work for the Washington's Birthday meet has been started. All who wish to enter the meet will please report to Mr. Hopkins on Monday, Wednesday, and Friday at 5.10 p. m.

GATUN.

The international high school basketball game held on Friday evening, January 26, drew an audience of 175 people. The score resulted: Gatun High School, 14; Panama National Institute, 12. Fred Huber refereed the game.

There will be a "smoker" at the Gatun clubhouse on Saturday evening, February 17. Some excellent talent has already been engaged, including the Tenth Infantry Orchestra.

Mrs. Blanche Caldwell, soprano soloist of Cristobal, sang four songs at the moving picture entertainment on Thursday evening, January 25. Mrs. Caldwell by unanimous request sang two additional numbers after the entertainment.

Two new Spanish classes were organized on Wednesday evening, January 24.

A new wrestling mat cover has been purchased for the Physical Department. A wrestling match will take place at the smoker on February 17.

A "Victrola" talking machine has been added to the equipment of the clubhouse.

Thirty-two books of the latest fiction have been added to the library. Any suggestions for new books may be left at the office. An order will be sent to the States within a few days.

Charles R. Hughes, Superintendent of Gatun Dam and Spillway, has been appointed a member of the Gatun Y. M. C. A. Executive Council.

"Existing Politics" was the subject discussed on Sunday evening at the meeting of the Discussion Club.

There will be a pool and checker tournament at the Gatun clubhouse on Saturday, February 3. Empire will send two pool players and one billiard player. Mr. Burnsee, the champion checker player, will play several of the Gatun men.

The following high scores in duckpins were made during the week ending January 27: Barte, 116, 103; Severn, 112; Vierbuken, 118, 103; Green, 106; Wurster, 113, 111, 100, 100; MacNalley, 101, 103; Durand, 102, 115, 109, 106; Teall, 101, 101; Lore, 108; Huttlemeyer, 101, 102, 101, 101; Rogers, 100. A local duck pin tournament starts this week.

CRISTOBAL.

On Wednesday evening, January 24, Mr. J. H. Lloyd gave a talk on the "Progress and Development of the United States Navy for the Past 100 Years." The talk included a historical review of the growth and numerical strength and mechanical development up to the present state of efficiency. Mr. Lloyd is not an employe of the McClintic-Marshall Company, as was previously reported, but of the Commission.

Two hundred and sixty-eight people were present at the moving picture show, Saturday evening, January 27. A surprise was furnished the audience by the singing of Mrs. Blanche Caldwell, between pictures. The next in the series of moving pictures will be given on Wednesday evening, February 7. It is expected that there will be several illustrated songs at this entertainment.

On Saturday evening, January 27, a pool team visited Cristobal from the Empire clubhouse; also a contest was given in billiards, both games being won by Empire.

A subscription list is being circulated to procure medals of merit for the members of the basketball team who have passed through two seasons, winning every game. Anyone desiring to contribute to this fund will kindly leave his name with A. L. Chambers.

On Saturday, February 3, the boys of the Cristobal Association will go to Gatun to compete with the Y. M. C. A. boys at that point in basketball, indoor baseball and bowling.

On Friday evening, February 2, the Checker Club will hold a unique contest. Seven players will be selected to sit at as many tables. Seven other players will be chosen to enter in the circle and form and endless chain. Any member desiring to enter this contest may leave his name at the desk before that night.

The next session of the Debating Club will be held on Wednesday evening, January 7. The topic for discussion will be, "Resolved, that the 8 o'clock curfew law should be established in Cristobal for children under 16 years of age." All men are invited to attend and participate in the discussion.

LOST—At merry-go-round in Colon, gold bell-shaped locket, with "Nettie, 1886" engraved on back. Please return to Mrs. Nettie G. Turner, Cristobal.

FOUND—At Gatun, photograph of young woman; Boston photographer. Owner may obtain it by calling at the Commission Clubhouse.

BASEBALL.

PANAMA CANAL LEAGUE.

RESULT OF GAMES, JANUARY 28.

At Empire—Empire, 12; 10th Infantry, 3.
At Ancon—Com.-Sub., 6; Ancon, 3.

STANDING OF CLUBS.

	P.	W.	L.	P.C.		P.	W.	L.	P.C.
Com. Sub.	5	4	1	.800	Empire	5	2	3	.400
Ancon	6	4	2	.666	10th In'ty.	6	1	5	.166

SCHEDULE FOR FEBRUARY 4.

At Colon—Com.-Sub. vs. 10th Infantry.
At Ancon—Empire vs. Ancon.

GAME AT ANCON, JANUARY 28, 1912.

C.-S.	AB.	H.	PO.	A.	E.	Ancon.	AB.	H.	PO.	A.	E.
Buch'an,3b	4	1	4	1	1	Murray, rf.	4	2	0	0	1
Brievo'le,cf	3	1	2	1	0	Edwards,lf.	4	1	3	0	0
Curtis,ss...	5	0	2	1	0	Dren'an,cf.	3	0	1	0	0
Kellogg,rf..	4	0	0	2	0	Smith,R,2b	4	2	2	2	3
Sullivan,lf.	5	2	1	0	0	Potter,ss...	4	0	3	1	1
Herring,2b.	4	1	0	6	0	Pearman,3b	4	2	2	3	2
Weiss,1b...	3	1	8	1	0	Guptil,1b..	4	3	8	1	0
Beard,c...	4	0	9	2	0	Hodnet,c..	1	0	5	3	0
Davis,p...	4	1	1	4	0	Nygren,p..	3	0	2	5	3
						Russell,p..	1	0	0	1	0
						*Lindberg.	1	1	0	0	0
Totals....	36	7	27	18	1	Totals....	33	11	26 †	16	10

Com.-Sub	1	0	0	0	0	2	0	3	0—6
Ancon	2	0	0	0	0	1	0	0	0—3

Runs—C.-S.:Buchanan (3), Brievogle, Curtis, Beard; Ancon: Murray, Edwards, Smith, R. Earned runs—Ancon 1, Com.-Sub. 0 Three base hits—Smith, R. Stolen bases—Buchanan (2), Brievogle, Sullivan, Smith, R. First base on errors—Com.-Sub. 6. Base on balls—off Davis 4, off Nygren 6. Struck out—by Davis 6, by Nygren 4. Hit by pitcher—by Nygren 1, (Brievogle). Left on bases—Ancon 7, Com.-Sub. 10. Double plays—Davis to Beard to Buchanan, Brievogle to Curtis. Umpire—Foster. Time of game—2.10. Scorer—Hoffman.

*Batted for Murray in the ninth inning.

†Herring hit by a batted ball.

Game protested by Ancon on account of Com.-Sub. playing Weiss and announcement so made before the game began.

GAME AT EMPIRE, JANUARY 28, 1912.

Empire.	AB.	H.	PO.	A.	E.	Infantry.	AB.	H.	PO.	A.	E.
Bryan,ss...	5	0	3	4	0	Alley,cf....	2	0	0	0	0
Clements,rf	4	2	0	0	0	Deleh'ty,3b	2	0	0	1	2
Maguire,1b	5	1	8	0	1	Webber,lf..	4	1	4	0	0
Murphy,cf.	3	0	1	0	0	Smith,ss...	4	0	2	3	1
VanZan't,lf	3	0	4	0	0	Trickey,c..	4	2	6	1	1
Hepler,2b..	2	2	0	2	1	Duff,p,3b..	1	0	2	0	1
McC'ley,3b	5	1	1	0	0	Lucas,1b..	3	2	6	0	2
Cushing,c..	5	2	10	0	1	Cas'dy, 3b.	4	0	1	0	2
Barnes,p...	4	1	0	3	0	VanOt'n,p.	4	1	1	2	2
						Moch,rf...	3	1	0	0	0
						Saluski,2b.	3	0	2	4	0
Totals...	36	9	27	9	3	Totals...	34	7	24	11	11

Empire	0	1	3	0	3	0	2	3	x—12
Infantry	1	0	2	0	0	0	0	0	0— 3

Runs—Empire: Bryan, Clements, (2), Maguire (2), Murphy (2), Van Zandt (2), Hepler, McCauley, Barnes. Infantry: Trickey, Lucas, Van Ottman. Earned runs—Empire 5, Infantry 1. Two base hits—Trickey, Moch, Clements. Home runs—Hepler. Sacrifice hits—Van Zandt, Hepler. Stolen bases—Van Zandt, McCauley (2). First base on errors—Empire 8, Infantry 2. Base on balls—of Van Ottman 3. Struck out—by Barnes 10, by Van Ottman 2, by Duff 1. Hit by pitcher—by Duff 1, (Murphy). Left on bases—Empire 8, Infantry 4. Double plays—Smith to Duff. Umpire—Irwin. Time of game 1.45. Scorer—Garrett. Hits—off Van Ottman, 6 in 7 innings; off Duff 3 in 1 inning.

Brennan ran for Van Ottman in the 4th.

New Orleans Baseball Club to Play on Isthmus.

A series of games will be played on the Isthmus during February between an All-Isthmian team and the New Orleans baseball team of the Southern League. The New Orleans team will arrive on February 15, and the games will be played as follows:

Date.	Day.	Place.
February 17	Saturday	Colon
February 18	Sunday	Empire
February 22	Thursday morning	Colon
February 22	Thursday afternoon	Colon
February 25	Sunday	Ancon

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Gorgona, C. Z., Sunday, February 4, 1912, at 6.00 p. m. The program follows:

1. March—*Flag of Victory*............Von Blom
2. Selection—*Miss Nobody From Storland*...Howard
3. Waltz—*Farewell to Munich*............Gung'l
4. Overture—*Mercedes*............Dessane
5. (a) *Maple Leaf Rag* (by request)............Joplin
   (b) *That Mysterious Rag*............Snyder
6. *Intermezzo Elegante from Tales of Hoffman*............Offenbach
7. *The Only Tune the Band Could Play was Auld Lang Syne*............Hayes
8. Medley Selection—*Summer Days*.......Reckerch
9. March—*Hampton Roads*............Alexander

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at the Hotel Tivoli, Ancon, February 11, at 7.30 p. m.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning February 1, 1912.

FRESH MEATS.

	Price.
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	16
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24

MISCELLANEOUS.

Caviare, Russian, per tin	47, 89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Beef, per pound	25
Eggs, fresh, dozen	42
one-half dozen only	22
Oysters, 1 qt. kegs, per keg	50

POULTRY AND GAME.

Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each	60, 70, 80, 90, 1.00
Ducks, Western, about 4½ pounds, each	1.00
Hens, milk fed, for roasting, about 3 pounds, each	50
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	25
Squabs, each	35
Capons, each	2.10
Grouse, each	50
Ducks, teal, per pair	60

CURED AND PICKLED MEATS.

Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡18
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30

DAIRY PRODUCTS.

	Price.
Butter—Creamery special, per pound	45
Cheese—Roquefort, per pound	45
Philadelphia cream, cake	10
Young America, per pound	20
Swiss, per pound	26
Edam, each	1.00
Parmesan, lb.	§35
Cheese—Camembert (about ½-pound) per box.	25
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**20
Fer-mil-lac, bottle	**20
Ice cream, quart	‡25
½-gallon	‡50

VEGETABLES AND FRUITS.

Beets, per pound	3
Celery, per head	10
Cabbage, per pound	4
Cucumbers, per pound	†15
Carrots, per pound	4
Lettuce, per pound	14
Onions, per pound	3½
Potatoes, white, per pound	3½
sweet, per pound	2
Parsnips, per pound	4
Turnips, per pound	3
Yams, per pound	3
Apples, per pound	5
Grapes, per pound	15
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12
Pears, per pound	5

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery

§Sold only from cold storage and not from commissaries.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon, during the week ending January 27:

Sixaola, January 20, from New York, with 245 bundles rails and castings, 12 packages rails and castings, for Atlantic Division.

Allianca, January 21, from New York, with 26 cases wire cloth, for Pacific Division; 50 kegs chloride potash, 62 cases incandescent lamps, 46 barrels castings, for Mechanical Division; 8 cases tickets, 5,400 pieces splice bars, 265 kegs bolts, nuts, washers, for Panama Railroad Company; 18 cases coupon books, for Examiner of Accounts; 116 packages bowling alleys, 10 cases lamp chimneys, 16 bundles asphaltum, 60 kegs rivets, 528 bales hay, 308 pieces lumber, 180 barrels coal tar, 734 bundles galvanized sheets, 322 bundles steel bars, 200 cases sapolio, 100 cases linseed oil, 90 sacks cork, 13 cases bolts and nuts, 21 cases enamelware, for stock; 80 cases drugs and sundries, for Sanitary Department; and a miscellaneous cargo, the whole consisting of 8,790 packages, weighing 500 tons.

Joseph J. Cuneo, January 22, from Philadelphia, with 11,000 cases dynamite, for stock.

Prinz Eitel Friedrich, January 21, from New York, with 10 cases water closets, for stock; 95 pieces castings for Mechanical Division.

Karen, January 22, from New Orleans, with 1,717 pieces lumber, 102 pieces piling, for stock; 1,352 pieces lumber, for Mechanical Division; 626 pieces pipe, for Pacific Division.

Almirante, January 25, from New York, with 5 cases castings, for Mechanical Division; 169 kegs rivets, for Panama Railroad Company; 11 barrels tie clips, 4,654 pieces steel ties, for Atlantic Division; 36 bales life preservers, 60 coils rope, 63 bundles wheelbarrows, 500 sacks oats, 18 pieces lumber, for stock.

Cartago, January 25, from New Orleans, with 58 pieces piling, 741 pieces lumber, 20 rolls cotton duck, 75 sacks dairy feed, 455 drums kerosene, for stock; 1,119 pieces lumber, for Mechanical Division.

Carrillo, January 27, from New York, with 3 cases valves, for Pacific Division; 6 sacks shellac, for stock; 45 cases copper bars, for Atlantic Division.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending February 7, 1912 (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
February 1	......	1.37	8.05	2.18	8.32
February 2	......	2.38	9.00	3.15	9.28
February 3	......	3.32	9.53	4.05	10.20
February 4	......	4.22	10.41	4.52	11.06
February 5	......	5.10	11.28	5.38	11.53
February 6	......	5.56	12.14	6.22	......
February 7	12.39	6.42	P.M. 12.57	7.06	......

The following ships arrived at, or departed from, the port of Balboa during the week ending January 27:

Arrivals—January 22, *Mexico*, from Valparaiso; January 22, *Urubamba*, from Callao; January 25, *Santa Rita*, from Port Harford; January 27, *Manavi*, from Buenaventura.

Departures—January 21, *Leelanaw*, to San Francisco; January 22, *Ucoyoli*, to Callao; January 25, *Huasco*, to Valparaiso; January 27, *Stanley Dollar*, to San Francisco; January 27, *Newport*, to San Francisco; January 27, *Urubamba*, to Callao; January 27, *Peru* (P. S. N.) to Guayaquil.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Advance	P. R. R.	Saturday	Jan.	27
Panama	P. R. R.	Saturday	Feb.	3
Allianca	P. R. R.	Friday	Feb.	9
Colon	P. R. R.	Friday	Feb.	16
Advance	P. R. R.	Friday	Feb.	23
Panama	P. R. R.	Thursday	Feb.	29
Allianca	P. R. R.	Wednesday	Mar.	6
Colon	P. R. R.	Wednesday	Mar.	13
Advance	F. R. R.	Tuesday	Mar.	19
Panama	I. R. R.	Tuesday	Mar.	26

CRISTOBAL TO NEW YORK.

Colon	P. R. R.	Saturday	Feb.	3
Advance	P. R. R.	Friday	Feb.	9
Panama	P. R. R.	Friday	Feb.	16
Allianca	P. R. R.	Thursday	Feb.	22
Colon	P. R. R.	Thursday	Feb.	29
Advance	P. R. R.	Wednesday	Mar.	6
Panama	P. R. R.	Wednesday	Mar.	13
Allianca	P. R. R.	Tuesday	Mar.	19
Colon	P. R. R.	Tuesday	Mar.	26
Advance	P. R. R.	Monday	Apr.	1
Panama	P. R. R.	Sunday	Apr.	7

NEW YORK TO COLON.

Santa Marta	U. F. C.	Wednesday	Jan.	24
Bluecher	H.-A.	Thursday	Jan.	25
Prinz August Wilhelm	H.-A.	Saturday	Jan.	27
Turrialba	U. F. C.	Saturday	Jan	27
Metapan	U. F. C.	Wednesday	Jan.	31
Altai	H.-A.	Friday	Feb.	2
Tivives	U. F. C.	Saturday	Feb.	3
Sibiria	H.-A.	Saturday	Feb.	3
Tagus	R. M.	Saturday	Feb.	3
Zacapa	U. F. C.	Wednesday	Feb.	7
Prinz Eitel Friedrich	H.-A.	Saturday	Feb.	10
Sixaolo	U. F. C.	Saturday	Feb.	10
Almirante	U. F. C.	Wednesday	Feb.	14
Carrillo	U. F. C.	Saturday	Feb.	17
Oruba	R. M.	Saturday	Feb.	17
Prinz Sigismund	H.-A.	Saturday	Feb.	17
Santa Marta	U. F. C.	Wednesday	Feb.	21
Prinz August Wilhelm	H.-A.	Saturday	Feb.	24
Sibiria	H.-A.	Saturday	Mar.	2
Orotava	R. M.	Saturday	Mar.	2
Prinz Joachim	H.-A.	Saturday	Mar.	9
Magdalena	R. M.	Saturday	Mar.	16

COLON TO NEW YORK.

Almirante	U. F. C.	Thursday	Feb.	1
Prinz Sigismund	H.-A.	Saturday	Feb.	3
Carrillo	U. F. C.	Tuesday	Feb.	6
Oruba	R. M.	Tuesday	Feb.	6
Santa Marta	U. F. C.	Thursday	Feb.	8
Prinz August Wilhelm	H.-A.	Tuesday	Feb.	13
Turrialba	U. F. C.	Tuesday	Feb.	13
Metapan	U. F. C.	Thursday	Feb.	15
Sibiria	H.-A.	Monday	Feb.	19
Tivives	U. F. C.	Tuesday	Feb.	20
Orotava	R. M.	Tuesday	Feb.	20
Zacapa	U. F. C.	Thursday	Feb.	22
Prinz Eitel Friedrich	H.-A.	Tuesday	Feb.	27
Prinz Sigismund	H.-A.	Monday	Mar.	4
Magdalena	R. M.	Tuesday	Mar.	5
Prinz August Wilhelm	H.-A.	Tuesday	Mar	12
Thames	R. M.	Tuesday	Mar.	19

NEW ORLEANS TO COLON.

Heredia	U. F. C.	Saturday	Jan.	27
Parismina	U. F. C.	Wednesday	Feb.	7
Abangarez	U. F. C.	Wednesday	Feb.	14
Cartago	U. F. C.	Saturday	Feb.	10
Heredia	U. F. C.	Saturday	Feb.	17

COLON TO NEW ORLEANS

Abangarez	U. F. C.	Thursday	Feb.	1
Cartago	U. F. C.	Thursday	Feb.	1
Heredia	U. F. C.	Thursday	Feb.	8
Parismina	U. F. C.	Thursday	Feb.	15
Atenas	U. F. C.	Thursday	Feb.	15
Cartago	U. F. C.	Thursday	Feb.	22
Abangarez	U. F. C.	Thursday	Feb.	22

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages. The *Altai* cabins are all sold at second cabin rates.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a.m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 2 p. m.; ships for New York via Kingston on Tuesdays at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, FEBRUARY 7, 1912. No. 24.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Special Reamers for Gate Construction.

For the final riveting of lock gates, the skeletons and sheathing of which have been put in place at Gatun, the McClintic-Marshall Construction Company has installed 8 special electric reaming machines. Each machine, which weighs 6 tons, carries two spindles, mounted on a heavy cast base and driven by a 10-horse-power induction motor. That the machine may be carried over the face of the gate, it is mounted on a broad adjustable scaffold, extending the length of the gate, supported by chain-blocks from brackets affixed to the top of the gate. Some of the holes on the upstream face of a gate are enlarged to a diameter of 1-1|16 inches, and others to 15|16 of an inch, and those on the downstream face are made 15|16 of an inch.

These machines are now in use on the main gates of the upper lock at Gatun and will later be used on all of the gates in the three sets of locks. They were designed by the Foote-Burt Company of Cleveland, Ohio, especially for this work and the distinguishing features are great power, 9 speeds, from very slow for heavy drilling to very high for lighter reaming, and fixed spindles arranged to suit the uniform spacing of rivet holes in the lock gates. On test one of the machines drilled 1-1|16-inch holes through 1-inch plates in four seconds, a rate of 15 inches per minute. It is estimated that each machine is capable of doing the work of five of the usual type of portable reamer.

Removal of Cantalever Cranes.

The removal of the fourth and last of the concrete placing cranes from Pedro Miguel Lock began on January 30, when the McClintic-Marshall Company began to dismantle chamber crane No. 3, which had been at work in the east chamber, to transport it to Miraflores, where it will be erected in the east chamber of the lower lock. The last of the four mixing, or berm, cranes which had been employed at Pedro Miguel was moved in October and the company has now completed the reerection of the other chamber crane, which it began to move in December. The side and center walls proper at Pedro Miguel are practically completed and the placing of the concrete requisite for the laying of the towing tracks and to finish the details, as well as for the approach and wing walls, will be done with derricks and locomotive cranes and by the use of portable mixers. When the moving is finished there will be four berm and four chamber cranes in use at Miraflores. In a good day's work this plant will be able to mix and place about 3,500 cubic yards of concrete.

Construction of Gatun Dam.

Hydraulic filling in the east half of Gatun Dam has been completed and the dry fill for the south toe of this wing, for a thousand feet from the spillway toward the locks, has been brought to full height. The top, which is at elevation 104 feet above sealevel, will not be brought higher. The west half of the dam, where hydraulic filling continues, is now about 20 feet lower than the east half.

There remain yet to be placed on the entire dam, 2,300,000 cubic yards of dry fill. After February 15 no more spoil will be taken to Gatun from Culebra Cut, and the number of steamshovels working in borrow pits to supply spoil for the dam construction will be increased from two to six. After May 1, 1912, the number of shovels at this work will be eight, and it is estimated that the dry fill can be completed by January 1, 1913. The building of the dam was begun in August, 1907, with the placing of material for the toes, and the hydraulic filling was begun on December 24, 1909. In the east wing, 4,181,496 cubic yards of wet material were placed, 4,670,215 cubic yards of rock and earth have been placed to date, and it is estimated that 850,134 cubic yards of dry fill will be required for completion.

Bridge for Towing Tracks.

Plate girders for bridging the gap between the intake buttress of the side walls and the chain fender buttress near the upper wing walls of the locks have been received at Pedro Miguel and Miraflores. A description of the bridges and of the service required of them was given in THE CANAL RECORD of August 2, 1911. Each girder, which consists of a web plate with flanges of angles riveted back to back, is 55 feet 10 inches long, 5 feet 4½ inches deep and 17½ inches wide at base and top. Three thicknesses of metal are used, the lightest girders weighing 15,000 pounds, the intermediate 23,000 pounds, and the heaviest 28,000 pounds. In use, the intermediate girder will be placed 4 feet from the outer edge of the space to be bridged; 16 feet from it the heavy girder will be set in parallel and the light girder will be laid at a distance of 9 feet 6 inches from the central one. The bridge is to be covered with reinforced concrete and will carry the rack and return tracks for the towing locomotives. The girders will be cased on sides and bottoms with concrete, to preserve the metal from climatic corrosion and make the appearance harmonize with the rest of the concrete work.

Barges to be Towed Around South America.

It has been decided to send the tug *Reliance* and three 600-cubic yard barges from the Atlantic side around to Balboa by way of the Strait of Magellan. The tug and barges are meant to take the place of clapets 7, 8, and 10, old French equipment, which, after long service, are so badly worn that they must be retired from use. As far back as 1909 it was foreseen that the clapets would not last until the end of the work and the distribution of barges for the estimated work was scheduled accordingly. The growth of demand for sand for use other than in the Pacific Division construction has necessitated an increase of equipment. The practicable completion of the delivery of crushed rock from Porto Bello to Gatun make it feasible to transfer a part of the Atlantic equipment to the other side.

The vessels will be put in order at the Cristobal shipyards and it is the desire to start not later than the middle of the month. Assuming that they will travel at from 4½ to 5 knots an hour and make 8 or 9 stops on the way, the time required for the voyage of 10,500 knots is estimated at about 100 days. Weather conditions along the South American coast are more favorable during the several months to come than during any other time of the year. The crew will be supplied by the Pacific Division, which estimates that the cost of the voyage will be not more than $15,000. It is estimated that it would cost $20,000 each to repair the clapets and that $100,000 will be saved by the transfer.

Lumber Wharf at Balboa Completed.

The laying of concrete for the lumber wharf at Balboa, the superstructure of which was begun on December 2, 1911, was finished on February 6. In the month of January, 342 running feet, of full width of 30 feet, were laid in 26 working days. This was at the rate of a panel, 30 feet long, with beams and flooring, containing 102.4 cubic yards of concrete; in 2.36 days. All of the concrete for a panel was placed on the same day, in order to insure the proper "set," and after the concrete had hardened the forms were taken down and reerected on the next caissons for the adjoining panel. From 10 to 12 Americans and between 125 and 150 silver employes made up the daily force on the superstructure, under the direction of Mr. W. J. Spalding.

The approach to the wharf from the sea is blocked by the trestle and embankment for the railway track to the sand wharf. A new track to the latter is being laid from the west, switching in from the Panama railroad at a point close to the shipways repair shops, and

NOTES OF PROGRESS.

(Continued.)

passing under a corner of the shed and close by the resident engineer's offices to the sand wharf. When the new track is put in service the present one will be removed and dredges will complete the channel excavation to the lumber wharf.

Bascule Bridge at Monte Lirio.

A bascule, or balanced lift, span will be placed in the steel girder bridge on which the relocated line of the Panama railroad crosses the Gatun River, one half mile north of Monte Lirio. This will give access to the upper arm of Gatun Lake which otherwise would be closed to vessels from the Canal. Bids have been requested for the lifting trusses, mechanism, electrical equipment, signals and other parts for the complete construction and operation under trial of this single track, single leaf bascule, which will be erected by the Commission, under direction of the contractor, upon the 103½-foot steel girders now on hand at the crossing of the river. This bridge will be about 318 feet long, composed of three half-through plate girder spans supported upon reinforced concrete piers. The channel piers, which the bascule will span, are 106.23 feet apart, center to center, and between them the channel is excavated to provide for 45 foot depth of water. The bascule will be operated by electricity.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 78 per cent completed, 176,905 cubic yards, out of a total of 225,000, having been placed at the close of work on February 3. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked	No. Mixers.
January 29	504	16.00	2
January 30	320	16.00	2
January 31	434	16.00	2
February 1	428	16.00	2
February 2	465	16.00	2
February 3	447	16.00	2
Total	2,598	96.00	2
Previously reported	174,333		
Grand total	176,931		

Porto Bello Crusher.

DATE.	Hours worked.	Cubic Yards.
January 29	3.10	1,600
January 30	3.45	1,678
January 31	4.05	1,877
February 1	4.30	1,781
February 2	3.45	1,800
February 3	.320	1,742
Total	22.35	10,478

Ancon Crusher.

DATE.	Hours worked.	Cubic Yards.
January 29	5.00	1,845
January 30	7.30	2,880
January 31	5.25	2,260
February 1	5.30	2,138
February 2	6.55	2,465
February 3	5.40	2,199
Total	36.00	13,787

Sight Seeing Train for Canal Tourists.

On Monday, February 5, the Panama railroad began a sightseeing excursion service over the Canal work. A train consisting of one first class passenger coach and the observation car now runs over the Central and Pacific Divisions on Saturday, Sunday, Monday, Wednesday, and Thursday, leaving Pedro Miguel station, and over the lock and dam work at Gatun, leaving Gatun station, on Tuesday and Friday,

Charge for each Division $1.00 gold. Regular transportation is required to point of beginning of observation trip, and return from point of ending it to home station.

New Railroad Train Schedule.

A schedule of the running time of passenger trains over the Panama railroad, effective February 15, is published elsewhere in this issue of THE CANAL RECORD.

CONCRETE WORK IN THE LOCKS.

Over 77 per cent of the concrete for the locks is in place, the amount at the close of work on February 3, being 3,262,738 cubic yards, out of a total of approximately 4,199,400. A total of 26,079 cubic yards of concrete was laid in the locks during the week ending February 3

GATUN LOCKS.

Over 89 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on February 3 being 1,805,833 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending February 3, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
January 29	1,048	17.20	4	232	3.40	2	....	1,280
January 30	804	12.49	5	328	4.40	2	....	1,132
January 31	834	18.06	4	196	2.40	2	....	1,030
February 1	740	12.26	3	388	4.40	2	....	1,128
February 2	532	8.34	4	398	4.40	2	....	930
February 3	1,030	16.35	4	270	3.40	2	....	1,300
*Portable mixers	....	....	......	332½	....	......	....	332½
Total	4,988	85.50	4	2,144½	24.00	2	....	7,132½
Previously reported	....	....	......	....	....	......	....	1,796,102½
Grand total	....	....	......	....	....	......	....	1,803,235

The 332½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days: January 29, 66; January 30, 70½; January 31, 73½; February 1, 48; February 2, 36½; February 3, 38.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 96 per cent completed, 807,670 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on February 3. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
January 29	468	14.00	2	263	21.50	4	....	731
January 30	508	15.00	2	277	24.50	4	....	785
January 31	524	15.50	2	218	21.50	4	....	742
February 1	434	13.00	2	179	15.50	2	....	613
February 2	464	13.50	2	212	22.50	3	....	676
February 3	460	13.50	2	302	28.25	4	....	762
Total	2,858	84.50	2	1,451	133.75	3.5	....	4,309
Previously reported	....	....	......	....	....	......	4,423	803,361
Grand total	....	....	......	....	....	......	4,423	807,670

MIRAFLORES LOCKS.

Over 47 per cent of the concrete for the system of two twin locks at Miraflores was in place on February 3, the total amount on that date being 649,235 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.	*Cu. Yds.*								*Cu. Yds.*	*Cu. Yds.*
Jan. 29	1,558	43.33	6	182	3.58	2	247	18 .00	3	....	1,987
Jan. 30	1,570	35.67	6	170	2.67	2	125	7.00	1	....	1,865
Jan. 31	1,560	41.33	6	244	3.63	2	184	11.50	2	....	1,988
Feb. 1	1,642	39.83	7	394	6.33	2	192	12.50	2	....	2,228
Feb. 2	1,888	54.91	7	324	5.33	2	70	2.50	1	....	2,282
Feb. 3	1,334	32.25	7	314	7.17	2	42	2.00	1	....	1,690
Total	9,552	247.32	6.5	1,628	28.71	2	860	53.50	1.67	....	12,040
Previously reported	....	....	......	....	....	......	....	....	......	3,693	637,195
Grand total	....	....	......	....	....	......	....	....	......	3,693	649,235

HIGHWAY OVER CRUCES TRAIL

Proposed Macadam Road Will Follow Old Trade Route.

It is proposed to construct a macadamized road over the old Cruces trail, from a point where it joins the highway between Corozal and Panama, to Cruces, on the Chagres River, a distance of approximately 18 miles. Specifications are being prepared in order that bids for the work may be asked. The old trail has recently been cleared and one may now ride over it, following practically the same route that was taken by pack trains between the old city of Panama and the transfer station to water carry on the Chagres, at the point called Cruces. This is probably one of the oldest highways in America still in use. The Rio Grande and Chagres River were explored by the Spaniards in 1527, the journey down the Chagres from a point near Cruces occupying from April 3 to April 10 of that year. The river route across the Isthmus, with portage from Cruces, the head of navigation, to Panama, was probably used as early as 1530, and it was in common use as early as 1537.

The trail was paved with field rock, but no bridges were built. Its abandonment as a highway of international trade occurred about the middle of the eighteenth century when the treasure and merchandise fleets ceased to call at Porto Bello (1738). The trail experienced a revival of treasure hunting trade in 1849-1853 when it was used as part of the Panama route to California, but it was almost completely abandoned upon the opening of traffic of the Panama railroad.

The proposed opening of the Cruces trail is part of the general program of road building, under which there have been constructed 40.53 miles from Canal Zone funds, and 46.83 miles on account of the Canal work.

Civil Service Examinations.

A supply of the Manual of Examinations for the spring of 1912 has been received in this office.

The following examinations will be held beginning probably about the third Sunday in March and applications therefor will be received until February 28: assistant, Philippine Service; assistant inspector, and local inspector of boilers; assistant inspector, and local inspector, of hulls; bookkeeper, Philippine Service; civil engineer, Philippine Service; civil engineer student, Departmental Service; copyist topographic draftsman, topographic draftsman, Departmental Service; junior engineer draftsman, Engineer Department at Large; forest assistant, Forest Service; forest assistant, Philippine Service; industrial teacher, Philippine Service; junior engineer (mechanical), junior engineer (mining) Bureau of Mines; kindergarten teacher, Indian Service; matron, Indian Service; physician, Indian, Isthmian Canal, Philippine, and Public Health and Marine-Hospital Services, and Coast and Geodetic Survey; postal clerk, Isthmian Canal Service; teacher, Philippine Service; veterinarian, Philippine Service; and veterinary inspector, Departmental Service. Women will be admitted to the copyist topographic and topographic draftsman examinations, and may be admitted to the teacher, Philippine Service, examination; women only will be admitted to the kindergarten teacher and matron, Indian Service, examinations.

The following examinations will be held beginning probably about the second Sunday in April and applications therefor will be received until March 25: agricultural inspector, Philippine Service; cadet engineer, cadet officer, Lighthouse Service; civil engineer, civil engineer and draftsman, Departmental Service; mechanical draftsman, topographic draftsman, Isthmian Canal Service; engineer, Indian Service; farmer, Indian Service; fish culturist, Departmental Service; junior engineer (civil), junior engineer (mechanical or electrical), Engineer Department at Large, pharmacist, Public Health and Marine-Hospital Service; surveyor, Philippine Service; teacher, Indian Service; and trained nurse, Indian, Isthmian Canal, and Philippine Services. Women will be admitted to the teacher, Indian Service, examination. and women only will be admitted to the trained nurse, Philippine Service, examination.

In requesting application blanks for any of the above-named examinations the exact title thereof as given above should be stated. In filing applications the date of examination should be *omitted.* In answering questions in regard to bona fide residence, such residence must be shown in a State or Territory of the United States, and county thereof, *up to the time of filing application.*

It is to be noted that the examination for clerk, Isthmian Canal Service, will *not* be given during the spring of 1912. No inquiry in regard thereto should therefore be made before August 1, 1912.

Ample advance notice will be given of the dates of the next typewriter and stenographer and typewriter examinations.

JOHN K. BAXTER,
Secretary, Isthmian Civil Service Board.
Culebra, C. Z., February 5, 1912.

Canal Service Medals.

The following service medals are being held by the Washington Office, on account of inability to locate such employes as are living, or the relatives of those deceased. This list is being published in the hope that the publicity may call attention of interested parties to the matter, and proper addresses be secured:

Medal No.	Name.
	1907–1909.
2,360	Abercrombie, John
3,361	Brownawell, George W.
2,630	Cummings, William
2,321	Fey, Walter
3,416	Fitzgerald, James G.
3,581	Fitch, F. W.
3,119	Heisey, Charles E.
2,559	Lawver, Jacob I.
2,270	Pritchard, L.
2,754	Sharpe, William D.
2,901	Shelato, Sam
3,256	Woodgard, Claude C.
2,833	Wright, Wallace R.
*2,614	Lindsay, Robert E.
	1908–1910.
3,993	Adams, Leon
3,966	Bird, James V. .
3,809	Barron, Frank A.
4,405	Beyers, Robert
4,393	Blumer, G. H.
4,149	Corbett, Malachy J.
4,306	Coyle, Francis B.
3,650	Ellsworth, Cornelia H.
4,173	Garvey, Joseph T.
3,953	Hamilton, Ralph A.
3,913	Hackett, Michael W.
4,229	Johnson, James S.
3,706	Johnson, Joseph
4,531	Jones, Frank A.
3,899	Kelley, Daniel E.
4,204	Kane, George H.
4,138	Linne, George A.
3,868	MacDonald, John G.
4,115	Mahoney, Pat S.
4,188	Monroe, Peter J.
4,356	Nolan, William
3,832	Nelson, Edward
4,280	Randall, Charles B.
3,871	Sutcliffe, John W.
4,396	Windsor, Richard S., Jr.
4,248	Zeier, Andrew
*4,563	Day, Henry G.

*Deceased.

January Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Average	Years of Record	Rai'y days 1912
Pacific Section-						
Ancon........	1.22	.83	T	1.02	14	0
Balboa........	.97	.38	0	1.11	13	0
Miraflores....	3.58	.27	0	2.01	4	0
Pedro Miguel.	1.82	.03	0	.99	5	0
Rio Grande...	1.65	.02	.03	1.35	8	1
Central Section-						
Culebra......	1.31	.02	.05	1.75	22	2
Camacho.....	2.00	.04	.04	1.20	6	2
Empire.......	.70	.02	.01	.73	7	1
Gamboa......	1.24	.11	.06	1.84	27	3
Alhajuela.....	2.99	.14	.08	1.23	13	2
El Vigia......	.68	.20	.08	1.22	4	2
Gorgona......	1.60	.43	.20	1.85	8	1
New Frijoles .	......	......	.67	......	1	19
Trinidad.....	4.28	.64	1.38	3.32	5	13
Monte Lirio..	4.29	.89	2.14	3.61	5	22
Atlantic Sec.-						
Gatun.......	4.81	1.20	.91	3.83	8	10
Brazos Brook.	4.03	1.00	.61	3.52	6	15
Colon........	2.94	.99	.28	3.96	42	9
Porto Bello...	14.05	.84	.67	7.84	5	12

Rainfall from January 1 to 31, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon..........................	T	6	T
Balboa..........................	0	....	0
*Miraflores......................	0	....	0
Pedro Miguel....................	0	....	0
Rio Grande......................	.03	19	.03
Central Section—			
Culebra.........................	.03	15	.05
*Camacho........................	.02	15	.04
Empire..........................	.01	19	.01
Gamboa..........................	.02	*14	.06
*Juan Mina......................	.08	15	.15
Alhajuela.......................	.06	19	.08
*El Vigia.......................	.05	5	.08
*Gorgona........................	.20	19	.20
New Frijoles....................	.10	19	.67
*Trinidad.......................	.83	19	1.38
*Monte Lirio....................	.52	18	2.14
Atlantic Section—			
Gatun...........................	.57	19	.91
*Brazos Brook...................	.11	21	.61
Colon...........................	.12	30	.28
Porto Bello.....................	.19	20	.67
*Bocas del Toro.................	.39	16	.93

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †Same amount recorded on other dates.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, February 3. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Jan. 28...	125.3	91.7	44.3	13.8	13.8
Mon., Jan. 29..	125.3	91.7	44.2	13.7	13.7
Tues., Jan. 30..	125.2	91.6	44.2	13.6	13.6
Wed., Jan. 31..	125.2	91.6	44.3	13.6	13.6
Thurs., Feb. 1..	125.2	91.6	44.2	13.5	13.5
Fri., Feb. 2....	125.2	91.6	44.2	13.4	13.4
Sat., Feb. 3....	125.2	91.6	44.2	13.4	13.4
Height of low water to the nearest foot...	125.0	92.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending February 14, 1912 (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
February 8....	......	1.25	7.28	1.43	7.51
February 9....	......	2.14	8.15	2.31	8.40
February 10....	......	3.04	9.08	3.24	9.31
February 11....	......	4.02	10.10	4.26	10.34
February 12....	......	5.08	11.30	5.37	11.48
			P.M.		
February 13....	......	6.16	12.53	6.52	......
February 14....	1.01	7.21	2.00	7.56	......

CONTROL OF LOCK MACHINERY

Gates Will Open, Valves Operate, and Water Rise and Fall At Will of One Operator.

The gates, valves, and fender chains of the locks will be operated by electricity, and remotely controlled from a central point; that is, there will be a central control station for each of the series of locks at Gatun, Pedro Miguel, and Miraflores. In passing a ship through the locks it will be necessary to open and close miter gates weighing from 300 to 600 tons, fill and empty lock chambers containing from three and one half to five million cubic feet of water, raise and lower fender chains weighing 24,098 pounds each, and to tow the vessel through the locks. All these operations, except that of towing, will be controlled by one man at a switchboard. The towing will be done by electric locomotives running along the lock walls, in the manner described in THE CANAL RECORD of September 27, 1911. Specifications for the control apparatus have been sent to the Washington office, and bids will be requested a few weeks hence.

The control system for Gatun Locks is typical. Water is let into the lock chambers or withdrawn from them by means of culverts under the lock floor, which connect with larger culverts in the lock walls, through which water is carried from the higher to the lower levels. The main supply culverts are 18 feet in diameter, and the flow of water through them is controled by rising-stem gate valves, which can be completely opened or closed in one minute. In the center wall the culvert feeds both lock chambers, and therefore at each outlet into the lateral culverts there is a valve of the cylindrical type, in order that water may be let into or withdrawn from either chamber at will. A complete opening or closing of these cylindrical valves takes ten seconds. The miter gates are never opened or closed with a head of water on either side of them, the chambers being first emptied or filled by means of the valve and culvert system. The time required either to open or close the miter gate is two minutes.

A ship to be raised to the lake level will come to a full stop in the forebay of the lower lock, prepared to be towed through one of the duplicate locks by electric towing locomotives. The water in the lower lock chamber will be equalized with the sealevel channel, after which the miter gates will be opened, the fender chain lowered and the vessel passed into the first chamber, where the water is at sealevel. Then the miter gates will be closed. The rising stem gate valves at the outlet of the main culverts will be closed, while those above will be opened, allowing water to flow from an upper level into the lower chamber, which, when filled, will raise the vessel 28⅓ feet, to the second level. This operation will be repeated in the middle and upper locks until the ship has been raised to the full height of 85 feet above the level of the sea. At Gatun in the passing of a large ship through the locks, it will be necessary to lower four fender chains, operate six pairs of miter gates and force them to miter, open and close eight pairs of rising-stem gate valves for the main supply culverts, and thirty cylindrical valves. In all, no less than 98 motors will be set in motion twice during each lockage of a single ship, and this number may be increased to 143, dependent upon the previous condition of the gates, valves and other devices.

Each gate leaf, valve and fender chain is operated by a separate motor mounted near the machinery in chambers in the lock wall, the motors acting through suitable gears (or pump in the fender chain) upon the various machines. In each machinery chamber will be erected a starting panel containing contactors by which current will be applied to the motor and these panels will in turn be controlled from a main unit in the central control house. Some of the machinery chambers at Gatun will be 2,700 feet distant from the point of control; 90 per cent of them will be within 2,000 feet, and 50 per cent of the total within 1,200 feet.

Contactors—All contactors will be operated directly from the central control house without the intervention of relays, and without resistance in the control circuit. Small and medium-sized motors will be started and reversed by throwing directly on the line which will normally be at 220 volts and 25 cycles. The larger motors, above 25 horse-power, will have in addition one starting point in each direction with resistance in the primary. All motors are of the squirrel-cage type, except the locomotive traction motors which are of the slip-ring type. Starting resistance is specified in preference to compensators in order to obtain the simplest possible arrangement with a minimum number of contactors, and to obtain an unlimited range of adjustment in the starting resistance. Reversing will be done by double pole contactors, mechanically interlocked, and, in order to have all contactors on a panel alike, when a starting resistance is used, the resistance will be in two legs only of the three-phase circuit, and short-circuited by means of a double-pole contactor. Single-phase alternating current at 220 volts and 25 cycles will be supplied for the operating circuit of all contactors. Contactors will be designed for normal operation at this voltage, but shall continue to operate successfully if the voltage at the contactor coil terminals falls as low as 70 per cent of normal.

The motor for the rising-stem gate valve machine will have a rating of about 50 horse-power, miter gate moving and guard valve motors, 35 horse-power; cylindrical valves and other motors, 7½ horse-power; the chain fender pump motor will probably be rated at about 25 horse-power. In all there will be a total of 951 motors of all sizes and descriptions at all the locks, this total including 207 motors required to drive various pumps and pumping machinery.

Control House—The station from which control will be exercised over the movement of all the machines will be on the center wall at the lower end of the upper flight of locks at Gatun, and similarly placed at Pedro Miguel and Miraflores. It will be in a building raised high enough above the top of the wall to allow a towing locomotive to pass under, a height of 16 feet, and to command an uninterrupted view of every part of the locks. In this house will be a double control board duplicated to conform to the duplication in locks. The control board will be in the nature of a bench or table, 32 inches above the floor, containing a representation, part model and part diagrammatic, of the flight of locks controlled by the respective series of switches. Standing at his switchboard the operator will throw the switches, and before him will see in model or diagram the progress of the fender chains as they rise and fall, the movement of the miter gates inch by inch, the opening and closing of the gate valves in the main culverts at every stage, the operation of the cylindrical valves, and, in addition, indication of the gradual rise or fall of the water in the lock chambers. The switches controlling the various motors, together with their indicators, will be mounted upon the board in the same relative position as the machines themselves in the lock walls. Some distortion of scale will be allowed, to give room for the switches. The board must not be over four feet in width, in order that the operator may be able to reach beyond the middle of it, and the length of the board is limited to 30 feet at Gatun, and proportionally at the other locks.

Interlocks—The system will be interlocking, so that certain motors cannot be started in a certain direction until other motors are operated in a proper manner to obtain consistent operation on the whole, and to avoid any undesirable or dangerous combinations in the positions of valves, gates, or fender chains. In this way and by the use of limit switches the factor of the personal equation in operating the machines is reduced to a minimum, almost mechanical accuracy being obtained. Before the operating pair of valves in the main culverts can be opened at least one pair of valves at the other ends of the locks, both upstream and downstream, must first be closed. This limits an operator to the act of equalizing water levels between locks, and keeps him from allowing water to flow from, say the lake level to the middle lock past the upper lock, thus preventing a possible flooding of the lock walls and machinery rooms. Interlocks, devoted to the control of action between the gate valves in the main culverts and the miter gates, prevent valves being opened a lock length above or below a miter gate which is being opened or closed, and thus prevent an operator causing a flow of water while the miter gates are being moved. Interlocks for the cylindrical valves guarding the openings from the center wall culvert to the lateral culverts will keep those of one side or the other closed at all times, except when it may be desired to cross-fill the chambers, when they may be opened by special procedure. An interlock prvents the operator from starting to open a miter gate before unlocking the miter forcing machine. The miter gates guarded by a fender chain must be opened before the chain can be lowered, and the chain must be raised again before the gate can be closed, or more exactly the switches must be thrown in this order, but the operations may proceed at the same time. The simple interlocks will prevent such a mistake as leaving the chain down through lapse of memory when it should be up to protect the gate.

Special Switches for Miter Gates—A commutating switch is used in connection with the miter gate moving machinery, and serves two functions. First, when the miter gates come to the closed position, and not until then, it completes a circuit from the control house, by means of which the miter forcing machine may be closed, for forcing and holding the gates in proper miter. In this way there is given an interlock by virtue of which the operator in the control station cannot close the miter forcing machine too soon. The other function is to alter the circuits controlling the rising and falling of the handrail of the foot walk over the gates, so that should the handrails be up when the gates start to open they will be automatically lowered. The circuits for raising the handrails are disconnected so that they cannot be raised as long as the gates are open. If the handrails were allowed to be up when the gates are opened back into the recesses of the lock wall they would interfere with a passing towing locomotive.

An auxiliary cut-out switch is provided for the miter gate strut. The gates are opened and closed by means of a strut or connecting rod acting between the gate and crank pin on a large driving gear, as described in THE CANAL RECORD of April 26, 1911. The relation of parts is such that a toggle effect is produced near the ends of travel, and the motor would be capable of doing damage to some of the parts should the gate meet with an obstruction. One end of the strut is allowed a telescoping movement of a few inches against the action of a nest of stiff springs. These springs oppose equally a lengthening or shortening of the strut and hold the telescoping parts against stops with sufficient initial tension so that with ordinary water resistance to the gate in normal operation there will be no change in length of the strut. Should the gate meet a solid obstruction near one end of travel, where the motor is capable of producing overload on the mechanical parts, the strut is compressed or extended according to direction of forces. The cut-out switch is mounted upon one end of the telescoping members, while a rod entering the switch casing is attached to the other. The movement of this rod in and out of the casing operates the switch to open the control circuit and stop the motor. It is necessarily arranged so that if the switch is operated by compression of the strut, that side of the control circuit is opened which produces a rotation of motor corresponding to compression, and the other circuit remains unbroken for reversing and drawing the gate away from the obstruction. If operated by tension and the motor is stopped, it is possible to reverse and apply compression to the strut.

Limit Switches; Indicator Switches—Limit switches for opening the control circuit when a machine has reached the proper point in its travel will be attached to all machines. It will be necessary for the operator in the control house to follow up the progressive movements of some machines, such as rising-stem gate valves and miter gates. These will accordingly be provided with synchronous indicating devices which will show by means of instruments on the control switchboard the movement and position of the machines at all times. In the case of certain other machines, like cylindrical valves and miter forcing machines, it is necessary for the operator to know only when the movement is completed. For this purpose there will be attached to the limit switch an indicator switch, which will indicate, by lighting lamps or otherwise, that a machine has reached the end of its travel.

In the masonry walls float wells are provided and connected to all lock chambers. At these wells suitable apparatus will be installed for operating instruments on the control board, which instruments will show at all times the water levels in the various locks and approaches.

The specifications call for materials in four classes as follows:

Class 1, Starting Panels—One hundred and sixteen for rising-stem gate valve motors, one starting and one running point both forward and reverse. One hundred and ten starting panels having one starting and one running point both forward and reverse for use with motors on 92 miter gate moving machines, and 18 guard valves. Two hundred and eighty starting panels with one point forward and one point reverse for use with motors on 120 cylindrical valves, 12 auxiliary culvert valves, 46 miter forcing machines, 80 miter gate handrails, 22 spillway gates.

Class 2, Limit Switches, Commutating Switches, Overload Cut-Out Switches, Indicator Switches, Hand-Rail Control Switches—One hundred and ten limit switches for use with 92 miter gate moving motors, and with 18 guard valves. Twenty-two limit switches for having indicator switch attached, for spillway gates. Fifty-eight switches arranged for having indicator switch attached for use with 46 miter forcing machines, and 12 auxiliary culvert valves. Eighty limit switches for use with handrail motors on mitering lock gates. Forty-six commutating switches for use with right hand miter gate moving machines. Forty-six commutating switches for use with left hand miter gate moving machines. Forty-six auxiliary cut-out switches for miter gate strut, right hand. Forty-six auxiliary cut-out switches for miter gate strut, left hand. Two hundred indicator switches for attachment to limit switches on 120 cylindrical valve machines, 46 miter forcing machines, 12 auxiliary culvert valve machines, 22 spillway gate machines. Eighty hand-rail controllers, foot operated.

Class 3. Miscellaneous Remote Indicators—Two hundred red and green lamp indicators for mounting on control board to be operated by switches. Ninety-two indicators giving progressive or synchronous indication for miter gate moving machines. One hundred and sixteen indicators giving progressive or synchronous indications for rising stem gate valves. Eighteen indicators giving progressive or synchronous indication for guard valves. Forty-six float well indicators, including float and machinery at well and indicator for mounting on switchboard.

Class 4, Control Switchboards—One control switchboard with control switches and interlocks for the locks at Gatun, Pedro Miguel, and Miraflores, one each. Control switchboards for the spillways of Gatun and Miraflores dams, one each.

Class 5, Fender Chain Control Apparatus—Two starting panels for 50 horse-power pump motor operating fender chains. Two operating valve control equipments. Two limit switches. Two indicating devices for showing position of chain to those in vicinity of the chain itself. Forty-six starting panels for 50 horse-power pump motor operating fender chains. Forty-six operating valve control equipments. Forty-six limit switches. Forty-six indicating devices for showing on control switchboard at all times the position of chain. Forty-six indicating devices for showing position of chain to those in the vicinity of the chain itself.

Pacific Division Sand Service.

A statement of sand supplied by the Pacific Division sand service during January follows:

	Cu. Yds.
Pacific Division	34,813
Atlantic Division	11,662
Central Division	255
Mechanical Division	400
Quartermaster's Department	50
Lighthouse work	184
Panama Railroad	1,708
Concrete Dock (Pacific entrance)	990
Miscellaneous	200
Total	50,262

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

There will be a meeting of the Executive Board of the Canal Zone Federation of Women's Clubs at Gorgona on Friday, February 9, at 2.30 p. m. The officers of the Federation and the presidents of the clubs constitute this board and all are urgently requested to attend. The clubs are requested to keep a list of the Federation officers on file in order that should it be necessary to communicate with the Federation no delay may be occasioned. This list was published in the issue of THE CANAL RECORD of January 31.

The general meeting of the Cristobal Woman's Club will be on Wednesday, February 7. Mr. Harry Sawtelle is to be the speaker.

The Gatun Woman's Club has arrangements under way for an entertainment to be given for the benefit of the Federation blind boy fund. Entertainments for the same object are also to be given by the Empire Woman's Club; the first is to be a sale held in the band stand on Saturday, February 10. Fancy articles, cakes, candies and other home made delicacies will be sold. The sale will begin at 5 o'clock and will continue into the early evening. The club will hold a second sale at Las Cascadas the last week in February. Arrangements for this sale are to be made at the next meeting of the club. The club met on Wednesday, January 31 at the home of Mrs. Charles E. Lingo.

There was a general meeting of the Paraiso Woman's Club on Wednesday, February 7,

The Gatun Sunshine Society will hold a tea and baby show in the chapel on Wednesday, February 14, the object being to raise money for the Gatun Room in the Arthur Home at Summit, New Jersey. The society has received a photograph of the room, with a cordial letter of appreciation for the contributions of the past year. One of the ways of raising funds that has been instituted by the society is the "sunshine sewing," each member of the society offering her assistance in sewing for twenty-five cents an hour. By this means a considerable sum of money was added to the fund last year.

Church Notes.

There will be a meeting of the Woman's Guild of St. Ferdinand's Church, Empire, on Tuesday, February 13, when there will be an election of officers for the ensuing term.

The meeting of the Woman's Guild of St. Luke's Church, Ancon was held at the Hotel Tivoli on Tuesday, February 6, at 9.30 a. m.; the second meeting for the month will be held at the home of Mrs. Charles F. Mason on Tuesday, February 20, at 3.30 p. m.

Boy Scouts.

The visit to the Isthmus on January 10 of Lieut.-Gen. Sir Robert Baden-Powell of the British Army, retired, founder of the Boy Scout movement in England, has caused a revival of interest among the boy scouts in the Canal Zone. The scout masters are holding weekly meetings for the special purpose of encouraging the study of the scout manual. It is expected that a general February outing will be held at Porto Bello on the 24th. There are now about 75 boy scouts in the Canal Zone. Colonel Roosevelt, for two years honorary vice-president of the Boy Scouts of America, has become the Chief Scout Citizen, and has assumed the direction of those activities in the scout movement that pertain to the training of the boys in citizenship and social service. Ernest Seton Thompson has charge of the activities pertaining to woodcraft, and Gifford Pinchot is at the head of those activities pertaining to the development of trees and other natural resources of the country.

Membership in Society of The Chagres.

The Society of The Chagres solicits applications for membership from those who are eligible under the following article of its Constitution:

ARTICLE 3. Membership in the Society shall be limited to white employes of the Isthmian Canal Commission or of the Panama Railroad Company of good character, who have earned the Roosevelt Canal Medal and two bars prior to the official opening of the Canal.

The initiation fee, which covers the cost of the Society's emblem, is $3.00 and the annual dues are $3.00 payable in advance. Copies of the Constitution can be obtained from the undersigned, who is also authorized to receive applications for membership.

JOHN K. BAXTER,
Secretary-Treasurer.

Culebra, C. Z., February 6, 1912.

Tennis Tournament.

The following was the result of the lawn tennis tournament in singles held on the court of the Gatun Tennis Club on Sunday, January 28: Preliminary—R. W. Hart, Cristobal, defeated Wells, Gatun, 6–2, 7–5; Dr. Ross, Ancon, defeated Tupper, Culebra, 6–3, 7–5; Newbold, Empire, defeated Stokes, Bas Obispo, 6–4, 6–3; Fechtig, Tivoli, won by default from Panama, not represented. Semifinals—Hart, Cristobal, defeated Dr. Ross, Ancon, 8–6, 10–8; Fechtig, Tivoli, defeated Newbold, Empire, 6–4, 6–2. Finals—Fechtig, Tivoli, defeated Hart, Cristobal, 6–3, 4–6, 6–2.

PERSONAL.

Lieut.-Col. John L. Phillips, with Mrs. Phillips, returned from the States on the *Advance* which arrived on Saturday, February 3.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on February 14, 1912. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m., on February 14, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

LOST—In Cristobal, ribbon watch fob, having gold locket engraved with letter "D" attached. Reward if returned to I. N. DeLong, Box 45, Cristobal

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving picture entertainments for the week February 12 to 17 is as follows: Monday, Gorgona; Tuesday, Cristobal; Wednesday, Gatun: Thursday, Empire; Friday, Culebra; Saturday, Corozal.

The Eberly Concert Company, consisting of John Eberly, baritone, Miss Alice Carey, violinist, Miss Elizabeth Weedman, soprano, and Miss Mary E. Lyon, reader, will arrive on the Isthmus on February 15 and will give a series of concerts in the various clubhouses. Mr. Eberly has sung in the principal cities of the United States and Canada. He was for some time featured on the Keith International Circuit. The other members of his company are entertainers of experience. The following dates have already been arranged, and it is likely that additional engagements will be made after the arrival of the company: Cristobal, February 16; Empire, February 17; Culebra, February 19; Gorgona, February 22; Corozal, February 23; Porto Bello, February 24; Empire, February 25; Gatun, February 26. Admission—Members free, others 50 cents, children 25 cents.

CULEBRA.

The following is the standing of the Chess Club:]

Name.	Won.	Lost.	Draw.
Bartlett	6	4	
DuBois	3	3	1
Goodenow	5	3	
Erickson	3	6	
Janney	6	3	
Newman	3	9	
Stearns	3	2	
Warner	2	1	
Wilson	0	0	1

A country school entertainment will be held on February 14, to which every one in Culebra is invited.

A Spanish class will begin as soon as arrangements with an instructor can be made.

The following is the standing in the Duck Pin Tournament:

Number of Team.	Standing.
Team Number 5	1
Team Number 4	2
Team Number 2	3
Team Number 6	4
Team Number 1	5
Team Number 8	6
Team Number 3	7
Team Number 7	8

The following are the high scores: Mengel, 102; Case, 110; Brown, 103.

The moving picture entertainment will be given on Saturday night of this week instead of Thursday night as previously published.

EMPIRE.

The following high scores were bowled on the alleys during the past week: Duck-pins—Gorham, 105, 126, 104, 104; Rodeighiro, 113, 107; Gustaveson, 101, 112, 105; Pinney, 100, 109, 110; Grund, 103; Parkis, 121; L. Giavolli, 110. Candle pins—Parkis, 105; Goolsby, 113, 107; Rodeighiro, 113.

The following are the five high average men in the local bowling tournament:

Name.	Games.	Average.
Rodeighiro	108	92.19
Gustaveson	39	90.74
Gorham	48	89.89
Grund	57	89.63
Pinney	81	89.59

On Thursday, February 1, Empire defeated Culebra in pool and billards by the following scores: Pool—Empire, Hursh, 125, McCoullough, 125; Culebra, Vogal, 54, Hillery 38. Billards—Empire, Wood and Smith 150; Culebra, Conlin and DuBois 121.

On Thursday, February 8 the Empire pool and billard players will go to Culebra for a return match.

The Cristobal pool and billard players will play at Empire on Saturday, February 10.

The following men have been named as a committee to assist with the gymnasium and athletic work: Messrs. Garrett, King, and Doran. Regular gymnasium classes will be started this week.

GATUN.

"Open house" was observed at the clubhouse on Saturday evening, February 3. The features of the evening were the pool, billiard, and checker matches. The results of the pool games are as follows: DePoorter (Gatun) 125, Hush (Empire) 104; Dalton (Gatun) 125, McCollough (Empire) 101; Hughes (Gatun) 100, McKeever (Empire) 71. In the billiard game Smith (Empire) defeated DePoorter (Gatun) 50 to 42. The checker match resulted : Mr. Burnsee champion checker player of the Isthmus, playing 21 men simultaneously won 37 out of 48 games. Eight games were draws. The men who won one game each were Barte, Chatfield, and Jefferies. Refreshments were served. About 200 men were present.

Mr. Weston of Cristobal was the soloist at the moving picture entertainment on Tuesday evening, January 30. Two hundred and seventy people attended.

A good program has been arranged for the vaudeville smoker to be held on Saturday evening, February 17.

The two Spanish classes for women were so successful for the first course of ten lessons that a second course will be started this week. Prof. Gomez will have charge.

Gatun clubhouse has invited the other clubhouses to participate in an athletic meet at Gatun on Saturday evening, February 10.

George A. Barte led the meeting of the Discussion Club on Sunday evening, February 10. The subject was "The Recall of Judges."

The high score in duck pins for the week ending February 3, was made by Huttlemeir, 113. Those making 100 or over for the week ending February 3 were: Dalton, 110; Severn, 101, 101; Vierbuchen, 100 Wurster, 108, 117; Teall, 103, 101; Lore, 106; Huttlemeir, 113, 112, 101; Rogers, 100, 101; Claherty, 100; Gayer, 101; Kerruish, 103.

The results of the match games between Cristobal boys department and Gatun boys department held at Gatun were all favorable to Cristobal. The games were bowling, basket ball, and indoor baseball. Physical Directors Burrell and Dwelle were in charge.

The February duck pin tournament has started. The man having the greatest pinfall for any ten games will be the winner of the tournament.

The members of the beginners class in Spanish are Dillon, Smith, Shuck, Scoffern, Storey and Fitzpatrick. Those who compose the advanced class are Waid, Gayer, Jervey, Johnson, Duckworth, Storey, Huber, Jecko, Chatfield, Hanson, R. and Hanson, J. A.

CRISTOBAL.

The debate held on Wednesday evening, December 31, subject, "Resolved that the Country Boy has More Advantages for Advancement than the City Boy," was decided in favor of the affirmative. The next public meeting of the Debating Club will be held on Monday evening, February 12. It will be in the nature of a Lincoln celebration. It is expected that an orchestra will be secured, and other musical specialties are being arranged for. The famous Gettysburg Speech will be read by the Rev. C. H. Elliott. The address of the evening, subject "Abraham Lincoln" will be delivered by C. J. Dinnin, President of the Club. The adult public is invited. Admission will be free and refreshments will be served at the close of the program.

Regular gymnasium classes for the boys will meet on Tuesday and Thursday afternoons at 3.15.

Afternoons for ladies to bowl are on Wednesdays and Fridays, 2.00 to 5.00 o'clock.

High scores in duck pins were as follows: Barte, 116, 105, 101; Barrett, 109, 105, 103; Herrington, 103, 102; Gibson, 109, 101; E. Orr, 102; Weston, 110; Hess, 102; Louch, 104. Bigpins—Gibson, 207; Beattie, 202.

Band Concerts.

A concert will be given by the Isthmian Canal Commission Band at the Hotel Tivoli, Ancon, C. Z., Sunday, February 11, 1912, at 7.30 p. m. The program follows:

1. March—*Hampton Roads*.............Alexander
2. Selection—*The Golden Girl*..............Howard
3. Airs from Stabat Mater—*Cujus Animam*...Rossini
4. Overture—*Mercedes*....................Dessane
5. (*a*) March—*Cosey Jones* (by request).....Reeves
   (*b*) Two Step—*Whistling John*...........Ascher
6. Humoresque—*The Girl I Left Behind*....Bellstodt
7. Descriptive—*A Hunt in the Black Forest*...Voelker
8. —*Pilgrims Chorus from Tannhauser*
   (by request)................Wagner
9. Medley Selection—*Haviland's Hits*........Hallo
10. March—*Tannhauser* (by request)........Wagner

CHARLES E. JENNINGS, *Musical Director.*

A concert will be given by the Isthmian Canal Commission Band at Cristobal, C. Z., Wednesday, February 14, 1912 at 8 p. m.

A concert will be given at Bas Obispo, February 18, 1912, at 6.00 p. m.

Married.

KEMPER-ROUNDS—On January 15, Miss Gladys Rounds to William Eugene Kemper at Cristobal.

BETEBENNER-STOHOWAIK—In Cristobal on Friday, February 2, Howard Betebenner of Carthage, Mo., and Frances Stohowaik of Kansas City, Mo., the Rev. Carl H. Elliott officiating. Canal Zone residence. Cristobal.

HILLAN-JAMIESON—On Tuesday evening, January 30, 1912 in the De Lesseps Building in Cristobal, Francis Patrick Hillan of St. Paul, Minn., and Grace Jamieson of Brooklyn, N. Y.

PANAMA RAILROAD COMPANY.

PASSENGER TRAIN TIME TABLE No. 11—IN EFFECT FEBRUARY 15, 1912.

SOUTHWARD.										Dis-tance from Colon	STATION	NORTHWARD										
Saturday only.		Sunday Only					Daily Except Sunday.					Daily except Sunday			Sunday only.					Monday only.	Saturday only.	Sunday only.
73	71	29	27	25	23	21	7	5	3			2	4	8	20	22	24	26	28	30	72	74
P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.		Leave. Arr.	A. M.	P. M.	P. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	P. M	A. M.
10.45	6.10	7.10	4.05	1.05	10.05	6.50	4.35	10.30	5.10	0	Colon	9.00	1.05	7.50	9.05	12.20	3.20	6.20	9.20	12.45	9.55	2.25
s10.50	s6.15	s7.15	s4.10	s1.10	s10.10	s6.55	s4.40	s10.35	s5.15	1.57	Mount Hope	s8.55	s1.00	s7.45	s9.00	s12.15	s3.15	s6.15	s9.15	s12.40	s9.50	s2.20
10.55	6.21	f7.21	4.16	1.16	f10.16	7.01	4.46	10.41	s5.21	4.40	Mindi	s8.49	f12.54	f7.39	f8.54	12.09	3.09	6.09	9.09	f12.34	9.44	2.14
s11.01	s6.27	s7.27	s4.22	s1.22	s10.22	s7.07	s4.52	s10.47	s5.27	5.95	New Gatun	s8.45	s12.49	s7.34	s8.49	s12.04	s3.04	s6.04	s9.04	s12.29	s9.39	s2.09
																P. M.						
s11.07	s6.33	s7.33	s4.28	s1.28	s10.28	s7.13	s4.58	s10.53	s5.33	6.78	Gatun	s8.41	s12.44	s7.29	s8.44	s11.59	s2.59	s5.59	s8.59	s12.24	s9.34	s2.04
s11.24	s6.50	s7.50	s4.45	s1.45	s10.45	s7.30	s5.15	s11.10	s5.50	14.50	Monte Lirio	s8.24	s12.27	s7.12	s8.27	s11.42	s2.42	s5.42	s8.42	s12.07	s9.17	s1.47
																				A. M.		
f11.35	f7.01	f8.01	f 4.56	f1.56	f10.56	f7.41	f5.26	f11.21	f6.01	20.99	Frijoles	f8.13	f12.16	f7.01	f8.16	f11.31	f2.31	f5.31	f8.31	f11.56	f9.06	f1.36
P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.		Arrive. Leave.	A. M.	A. M.	P. M.	A. M.	A. M.	P. M.	P. M	P. M.	P. M.	P. M.	A. M.
No. 73 will take schedule of No. 52 from Gamboa Junc. to Gorgona.	No. 71 will take schedule of No. 50 from Gamboa Junc. to Gorgona.	No. 29 will take schedule of No. 48 from Gamboa Junc. to Gorgona.	No. 27 will take schedule of No. 48 from Gamboa Junc. to Gorgona.	No. 25 will take schedule of No. 44 from Gamboa Junc. to Gorgona.	No. 23 will take schedule of No. 42 from Gamboa Junc. to Gorgona.	No. 21 will take schedule of No. 40 from Gamboa Junc. to Gorgona.	No. 7 will take schedule of No. 38 from Gamboa Junc. to Gorgona.	No. 5 will take schedule of No. 36 from Gamboa Junc. to Gorgona.	No. 3 will take schedule of No. 34 from Gamboa Junc. to Gorgona.			No. 2 will take schedule of No. 33 from Gorgona to Gamboa Junction.	No. 4 will take schedule of No. 35 from Gorgona to Gamboa Junction.	No. 8 will take schedule of No. 37 from Gorgona to Gamboa Junction.	No. 20 will take schedule of No. 39 from Gorgona ro Gamboa Junction.	No. 22 will take schedule of No. 41 from Gorgona to Gamboa Junction.	No. 24 will take schedule of No. 43 from Gorgona to Gamboa Junction.	No. 26 will take schedule of No. 45 from Gorgona to Gamboa Junction.	No. 28 will take schedule of No. 47 from Gorgona to Gamboa Junction.	No. 30 will take schedule of No. 49 from Gorgona to Gamboa Junction.	No. 72 will take schedule of No. 51 from Gorgona to Gamboa Junction.	No. 74 will take schedule of No. 53 from Gorgona to Gamboa Junction.
A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.		Leave. Arr.	A. M.	A. M.	P. M.	A. M.	A. M.	P. M.	P. M .	P. M.	P. M.	P. M.	A. M.
12.10	7.35	8.38	5.30	2.30	11.30	8.15	6.00	11.55	6.35	33.55	Gorgona	7.38	11.41	6.26	7.41	10.56	1.56	4.56	7.56	11.21	8.31	1.01
s12.15	s7.40	s8.40	s5.35	s2.35	s11.35	s8.20	s6.05	s12.00	s6.40	32.14	Matachin	s7.33	s11.36	s6.21	s7.36	s10.51	s1.51	s4.51	s7.51	s11.16	s8.25	s12.55
s12.20	s7.45	s8.40	s5.40	s2.40	s11.40	s8.25	s6.10	s12.05	s6.45	33.07	Bas Obispo	s7.29	s11.32	s6.17	s7.32	s10.47	s1.47	s4.47	s7.47	s11.12	s8.21	s12.51
s12.27	s7.52	s8.52	s5.47	s2.47	s11.47	s8.32	s6.17	s12.12	s6.52	34.68	Las Cascadas	s7.23	s11.26	s6.11	s7.26	s10.41	s1.41	s4.41	s7.41	s11.06	s8.14	s12.44
s12.34	s7.59	s8.59	s5.54	s2.54	s11.54	s8.39	s6.24	s12.19	s6.59	36.97	Empire	s7.18	s11.21	s6.06	s7.20	s10.35	s1.35	s4.35	s7.35	s11.00	s8.09	s12.39
s12.39	s8.04	s9.04	s5.59	s2.59	s11.59	s8.44	s6.29	s12.24	s7.05	37.96	Culebra	s7.12	s11.15	s6.00	s7.14	s10.29	s1.29	s4.29	s7.29	s10.54	s8.03	s12.34
s12.47	s8.12	f9.12	f6.07	f3.07	f12.07	f8.52	6.37	12.32	7.14	41.83	Paraiso Jct.	6.59	11.02	5.47	f7.04	f10.19	f1.19	f4.19	f7.19	f10.44	f7.52	s12.23
s12.49	s8.14	s9.14	s6.09	s3.09	s12.09	s8.54	s6.39	s12.34	s7.16	42.21	Pedro Miguel	s6.57	s11.00	s5.45	s7.00	s10.15	s1.15	s4.15	s7.15	s10.40	s7.50	s12.21
s12.54	s8.19	s9.19	s6.14	s3.14	s12.14	s8.59	s6.44	s12.39	s7.21	43.72	Miraflores	s6.51	s11.54	s5.39	s6.54	s10.09	s1.09	s4.09	s7.09	s10.34	s7.44	s12.16
s1.01	s8.26	s9.26	s6.21	s3.21	s12.21	s9.06	s6.51	s12.46	s7.27	46.22	Corozal	s6.44	s10.48	s5.33	s6.48	s10.03	s1.03	s4.03	s7.03	s10.28	s7.38	s12.09
f1.03	f8.28	f9.28	f6.23	f3.23	f12.23	f9.08	f6.53	f12.48	f7.29	46.90	Diablo	6.41	f10.46	f5.31	f6.46	f10.01	f1.01	f4.01	f7.01	f10.26	f7.36	f12.07
1.10	8.35	9.35	6.30	3.30	12.30	9.15	7.00	12.55	7.35	49.13	Panama	6.35	10.40	5.25	6.40	9.55	12.55	3.55	6.55	10.20	7.30	12.01
A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	P. M.	P. M.	A. M.		Arrive Leave.	A. M.	A. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.
73	71	29	27	25	23	21	7	5	3		s Stop. f Flag station.	2	4	8	20	22	24	26	28	30	72	74

Sunday only.	Saturday only.	Sunday only.	Sunday only.					Daily except Sunday				Daily except Sunday			Sunday only.					Saturday only.	Sunday only.
53	51	49	47	45	43	41	39	37	35	33		34	36	38	40	42	44	46	48	50	52
A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.	Leave. Arr.	A. M.	A. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.
1.03	8.33	11.23	7.58	4.58	1.58	10.58	7.43	6.28	11.43	7.40	Gorgona	6.33	11.53	5.58	8.13	11.28	2.28	5.28	8.33	7.33	12.08
s1.08	s8.38	s11.28	s8.03	s5.03	s2.03	s11.03	s7.48	s6.33	s11.48	s7.45	Matachin	6.28	s11.48	s5.53	s8.08	s11.23	s2.23	s5.23	s8.28	s7.28	s12.03
A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.	Arrive. Leave.	A. M.	A. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.

BALBOA TRAIN.

SOUTHWARD.										STATIONS.	NORTHWARD.									
Sundays only.	Work-nights only.	DAILY.									DAILY.								Work-nights only.	Sundays only.
69	67	65	63	61	59	57	55	53	51		50	52	54	56	58	60	62	64	66	68
P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	A. M.	A. M.	Leave Arrive	A. M.	A. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.
9.30	10.50	6.45	5.35	1.50	12.30	10.40	7.45	6.35	5.30	Panama	6.20	7.40	10.30	11.25	1.25	5.25	6.15	7.35	11.25	10.00
9.45	11.00	6.55	5.50	2.00	12.45	10.50	8.00	6.50	5.45	Balboa	6.05	7.25	10.20	11.10	1.15	5.10	6.00	7.25	11.10	9.50
										Arrive Leave										

BASEBALL.

PANAMA CANAL LEAGUE.

RESULT OF GAMES, FEBRUARY 4.

At Colon—Com.-Sub., 15; 10th Infantry, 3.

At Ancon—Ancon, 11; Empire, 4.

STANDING OF CLUBS.

	P.	W.	L.	P.C.		P.	W.	L.	P.C.
Com. Sub.	6	5	1	.833	Empire	6	2	4	.333
Ancon	7	5	2	.714	10th In'ty.	7	1	6	.142

SCHEDULE FOR FEBRUARY 11.

At Empire—Empire vs. 10th Infantry.

At Colon—Ancon vs. Com.-Sub.

GAME AT COLON, FEBRUARY 4, 1912.

C.-S.	AB.	H.	PO.	A.	E.	Infantry.	AB.	H.	PO.	A.	E.
Buch'an,cf.	3	2	1	0	0	Deleh'ty,3b	3	1	2	6	0
Weiss,1b...	6	1	8	1	1	Weber,lf...	4	0	1	1	0
Curtis,ss...	4	3	2	2	0	Smith,ss...	4	1	1	3	1
Kellogg,rf..	2	1	0	0	0	Trickey,c..	3	1	4	0	0
Sulli'n,W,lf	5	2	0	0	0	VanOt'n,p.	1	0	1	1	0
Herring,2b.	5	2	2	3	2	Saluski,2b.	4	0	1	2	0
Lacey,3b..	3	1	0	0	0	Cassiday,cf	4	2	3	0	0
Beard,c....	5	2	8	2	0	Mock,rf...	4	1	0	0	2
Coffin,p....	5	3	1	4	0	Carp'ter,1b	2	0	10	0	0
M'Custy,1b	0	0	2	0	0	Duff,p....	3	0	1	0	0
Brievogle,rf	3	2	2	0	0						
Totals...	41	10	26	12	3	Totals...	32	6	24	13	3

Com.-Sub...........1 0 6 1 3 0 4 0 x—15
Infantry...........0 0 0 0 0 0 0 1 2— 3

Runs—Com.-Sub: Buchanan (3), Weiss (2), Curtis (4), Sullivan, Herring, Beard, Coffin (2), Brievogle; Infantry: Smith, Trickey, Mock. Earned runs—Com.-Sub 12, Infantry 2. Two base hits—Curtis. Home runs—Trickey. Sacrifice flies—Lacey, Curtis. Stolen bases—Sullivan (2), Lacey Beard (3). Delehanty. First base on errors—Com.-Sub. 2, Infantry 2. Base on balls—off Coffin 3, off Duff 2 in 6 innings. Struck out—by Coffin 7, by Duff 3. Hit by pitcher—by Duff 1(Buchanan). Left on bases—Com.-Sub. 8, Infantry3. Double plays—Saluski to Smith to Carpenter. Umpire Irwin. Time of game—2 hours. Scorer—Mead.

*Carpenter out for not touching third base.

GAME AT ANCON, FEBRUARY 4, 1912.

Ancon.	AB.	H.	PO.	A.	E.	Empire.	AB.	H.	PO.	A.	E.
Edwards,lf.	5	3	1	0	0	Bryan,ss...	5	0	2	5	0
Drennan,cf	4	0	1	0	1	Clements,rf	4	1	1	1	0
Guptil,rf...	5	3	1	0	0	Maguire,1b	4	1	12	2	0
Smith,2b..	3	1	5	4	3	Murphy,cf.	4	1	2	0	0
Potter,ss...	3	0	1	5	0	VanZ'dt,lf.	4	0	2	1	0
Pearman,3b	5	1	0	3	0	Hepler,2b..	4	1	0	1	1
Nygren,1b.	3	1	12	1	2	Toone,3b..	4	0	1	1	1
Hodnet,c..	3	1	6	1	0	Cushing,c..	4	1	3	0	0
Russell,p..	4	2	0	3	0	Marshall,p.	2	1	0	3	0
						Barnes,p...	2	0	1	0	0
Totals...	35	12	27	17	6	Totals...	37	6	24	14	2

Ancon...............1 7 0 3 0 0 0 0 x—11
Empire..............0 0 0 0 0 1 0 3 0— 4

Runs—Ancon: Edwards, Drennan, Guptil (2), Smith, (2), Potter, Pearman, Nygren, Hodnet, Russell; Empire: Bryan, Clements, Maguire, Murphy. Earned runs—Ancon 4. Two base hits—Guptil, Smith. Passed ball—Hodnet. Sacrifice hits—Potter. Sacrifice flies—Smith. Stolen bases—Edwards, Drennan, Potter. First base on errors—Empire 5, Ancon 2. Base on balls—off Marshall 2, Barnes 1, Russell 1. Struck out—by Marshall 1, Barnes 2, Rusesll 6. Hit by pitcher—Marshall 2 (Smith and Nygren). Left on bases—Empire 7, Ancon 8. Double plays—Van Zandt to. Clements. Umpire—Foster. Time of game—2 hours Scorer—Hoffman. Hits—off Marhsall 9 in 4 innings, off Barnes 3 in 4 innings.

Central Division Unloaders.

Lidgerwood cars were unloaded on the Central Division dumps during the month of January as follows:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa	4	1,179	23,580
Miraflores	3	715	14,280
Gamboa	4	1,198	25,156
Total	11	3,092	63,016

OFFICIAL CIRCULARS.

Acting Chairman and Chief Engineer.

CULEBRA, C. Z., January 27, 1912.

CIRCULAR No. 430 (Corrected):

During my absence from the Isthmus, Col. H. F. Hodges will be in charge of the work as Acting Chairman and Chief Engineer, effective January 29, 1912.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Steel Castings and Patterns.

CULEBRA, C. Z., February 1, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

A plant for making steel castings has been installed and put in operation in the Gorgona Shops and it is desired that orders be placed at once on the Mechanical Division for any steel castings that will be required in the near future and which should be made on the Isthmus, in order that advantage may be taken of the presence of the metallurgical engineer in training the permanent foundry force in the making of steel castings.

A considerable number of parts of equipment has been made in the past of cast iron that should have been made of steel, because of the length of time required to obtain steel castings from the United States; in ordering castings made on the Isthmus in the future the relative economy of steel and iron should be considered and the order given accordingly.

A large part of the total time required to make a steel casting is consumed in the making of the pattern. It is therefore suggested that patterns be ordered made and stored of essential parts of equipment made of steel castings of which the probability of the parts being required in the future is sufficiently great to justify such action but the probability of the parts being required is not sufficiently great to warrant the keeping of them in stock.

H. F. HODGES,
Acting Chairman, Isthmian Canal Commission.
Second Vice-President, Panama Railroad Company.

Official Business Trip Tickets.

CULEBRA, C. Z., February 1, 1912.

CIRCULAR No. 224-A:

A new supply of I. C. C. Official Business Trip Tickets has been received. The new ticket differs slightly from the form now in use in that the points between which transportation is desired appear on both the going and return portions of the ticket. Provision has also been made for both first and second-class transportation, and new colors have been adopted. The new tickets will be honored by collectors on and after February 6, 1912.

In order to avoid the necessity of calling in a large number of outstanding countersigned tickets it has been decided to continue the use of the present form, in connection with the new ticket, up to and including February 29, 1912, after which date the new ticket must be used exclusively, and all outstanding tickets of the form now in use should be returned to this office for cancellation.

Requisitions should be made on this office at once for a supply of the new form, indicating your requirements as regards both first and second-class tickets.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Ratings and Rates of Pay.

CULEBRA C. Z., February 2, 1912.

CIRCULAR No. 229-v:

Europeans now employed in wrecking crews as Wreckers at the rate of $62.50 a month will be retained at that rate until they leave the service or are discharged.

In employing Europeans to fill future vacancies as Wreckers, for service in the wrecking crews, the maximum rate of pay of $50.00 a month is hereby established

The maximum rate of pay of $42.50 a month for West Indians, employed as Wreckers in the wrecking crews, remains unchanged.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Dynamite Not to Remain in Cars.

CULEBRA, C. Z., February 2, 1912.

CIRCULAR No. 431:

Consignees of explosives will not allow same to remain in cars over twenty-four hours after receipt of cars.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Gatun-Culebra Labor Train To Be Discontinued.

CULEBRA, C. Z., February 3, 1912.

CIRCULAR No. 416-A:

Effective Februaty 15, 1912, the Gatun-Culebra labor train will be discontinued on account of the difficulty and danger of operating the train over the single track line of the relocation, which latter is to be used for all main line traffic of the Panama railroad on and after the date above mentioned.

American employes working at Gatun and occupying family quarters at other points along the line of the canal, who have been using the Gatun-Culebra labor train, will be furnished with a weekly round-trip pass good on Saturdays and Sundays until such time as they receive assignment to quarters at Gatun. The expense of this transportation will be borne by the Panama Railroad Company.

H. F. HODGES,
Acting Chairman, Isthmian Canal Commission.
Second Vice-President, Panama Railroad Company.

Dismantling and Remodeling of Equipment.

CULEBRA, C. Z., February 3, 1912.

ALL ACCOUNTABLE OFFICERS:

It is directed that in future no equipment be dismantled or remodeled so that it loses its identity in any manner without first securing approved survey request

H. F. HODGES,
Acting Chairman and Chief Engineer.

Notice to Masters of Vessels.

Dredging alongside of Balboa wharf reveals the fact that a good deal of illegal material is being thrown overboard from vessels alongside wharves. This is in violation of Rule 51 of the Navigation Laws of the Canal Zone.

It is requested that instructions be reissued to the officers and crew under your command, to the end that nothing be thrown overboard while in the harbor limits. Violations of the Rule will be prosecuted.

J. ST. C. HUNT, *Port Captain.*

Balboa, January 29, 1912.

Auction Sale of Calves and Dairy Cows.

On Saturday, February 17, at 10.00 a. m., there will be sold at public sale at the Ancon Hospital Dairy, two dairy cows between 7 and 10 years of age, and ten or more calves between 1 and 2 months old. Terms of sale, cash.

The dairy is located near the insane asylum buildings in the rear of the hospital grounds.

CHAS. F. MASON, *Superintendent.*

Misdirected Letters.

The following insufficiently addressed letters originating in the United States and its possessions have been received at the office of the Director of Posts and may be secured upon request of the addressees:

UNCALLED FOR JANUARY 27.

Alligood, Joshia
Ashley, Mr. K. M.
Barker, Fitz
Bessey, Mr. Roy F.
Besson, Lieut. Frank S.
Buck, Mrs. C. C.
Carlton, Mr. Olaf
Chamberlain, Mr. Dan T.
Christie, Mr. C. D.
Conner, Mrs. W. T.
Cooke, Henry E.
Cotrel, Miss Lucy
Cussey, Mr. Fred
Doran, Mr. R. P.
Durton, Mr. G. H.
Evans, Mr. Robert E.
Fraum, Mr. Chas.
Fryer, Mr. Luther
Gaston, Mr. J.
Gleason, Mr. James P.
Goldman, Henry
Goodon, Miss Catherine
Grossberg, Mr. A. S.
Hanner, Mr. Clarence E.
Harajan, Horan E.
Harper, Robert
Hershey, Mr. A. D. (2)
Hinnershitz, Charles W.
Hinnan, Herbert D.
Hinund, Add
Hopkins, Jese T. S. C.
Kelly, Mrs. M. R.
King, Sam
Larrante, Mrs. Sam B.
Lehmann, Isaac (3)
Lewis, Mr. Robert
McGill, T. J.
McCormack, Mary A.
St. Louis, Miss Cecil
Tack, Mr. Chas. A.
Vaughan, Charles V.
Walton, Mr. Joe
Wheaven, Thomas

UNCALLED FOR FEBRUARY 3.

Almour, H. F.
Arosemena, Anibal (pkg.)
Berber, H. F.
Campani, Sidney (pkg.)
Clark, E. B. care Y.M.C.A.
Cook, Fred
Cotril, Miss Lucy
Dombrowsky, Alexander
Farr, Herb. (pkg.)
Gates, Mrs. I. N. (pkg.)
Gayer, Miss Clara L.
Geist, Fred
Giuseph, Yacono
Green, S. W.
Henry, Eustace Urich
Jarvis, Mrs. Grace
MacCulloch, R. S. (pkg.)
McDaira, Sarah
Marlow, L. B.
Morrison, Keith
Owyang, Earl
Roper, C. T.
Stone, Hugh
Sweeney, Jno. M.
Swika, A. A. (pkg.)
Tyler, J. B.
Walsh, Mr. Maurice

The following ships arrived at, or departed from, the port of Balboa during the week ending February 3:

Arrivals—January 28, *Ecuador*, from Guayaquil; January 28, *Kansas City*, from San Francisco; January 29 *Pachitea*, from Callao; February 2, *Oberon*, from Port Harford.

Departures—January 29, *Mexico*, to Valparaiso; January 30, *Pennsylvania*, to San Francisco; January 31, *Tampico*, to San Francisco; February 1, *Manavi*, to Buenaventura, February 2, *Ecuador*, to Guayaquil.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Panama	P. R. R.	Saturday	Feb.	3
Allianca	P. R. R.	Friday	Feb.	9
Colon	P. R. R.	Friday	Feb.	16
Advance	P. R. R.	Friday	Feb.	23
Panama	P. R. R.	Thursday	Feb.	29
Allianca	P. R. R.	Wednesday	Mar.	6
Colon	P. R. R.	Wednesday	Mar.	13
Advance	P. R. R.	Tuesday	Mar.	19
Panama	P. R. R.	Tuesday	Mar.	26
Allianca	P. R. R.	Monday	Apr.	1
Colon	P. R. R.	Monday	Apr.	8
Advance	P. R. R.	Saturday	Apr.	13
Panama	P. R. R.	Saturday	Apr.	20
Allianca	P. R. R.	Friday	Apr.	26

CRISTOBAL TO NEW YORK.

Advance	P. R. R.	Friday	Feb.	9
Panama	P. R. R.	Friday	Feb.	16
Allianca	P. R. R.	Thursday	Feb.	22
Colon	P. R. R.	Thursday	Feb.	29
Advance	P. R. R.	Wednesday	Mar.	6
Panama	P. R. R.	Wednesday	Mar.	13
Allianca	P. R. R.	Tuesday	Mar.	19
Colon	P. R. R.	Tuesday	Mar.	26
Advance	P. R. R.	Monday	Apr.	1
Panama	P. R. R.	Sunday	Apr.	7
Allianca	P. R. R.	Sunday	Apr.	14
Colon	P. R. R.	Saturday	Apr.	20
Advance	P. R. R.	Friday	Apr.	26
Panama	P. R. R.	Friday	May	3
Allianca	P. R. R.	Thursday	May	9

NEW YORK TO COLON.

Metapan	U. F. C.	Wednesday	Jan.	31
Altai	H.-A.	Friday	Feb.	2
Tivives	U. F. C.	Saturday	Feb.	3
Sibiria	H.-A.	Saturday	Feb.	3
Tagus	R. M.	Saturday	Feb.	3
Zacapa	U. F. C.	Wednesday	Feb.	7
Prinz Eitel Friedrich	H.-A.	Saturday	Feb.	10
Sixaolo	U. F. C.	Saturday	Feb.	10
Almirante	U. F. C.	Wednesday	Feb.	14
Carrillo	U. F. C.	Saturday	Feb.	17
Oruba	R. M.	Saturday	Feb.	17
Prinz Sigismund	H.-A.	Saturday	Feb.	17
Santa Marta	U. F. C.	Wednesday	Feb.	21
Prinz August Wilhelm	H.-A.	Saturday	Feb.	24
Sibiria	H.-A.	Saturday	Mar.	2
Orotava	R. M.	Saturday	Mar.	2
Prinz Joachim	H.-A.	Saturday	Mar.	9
Magdalena	R. M.	Saturday	Mar.	16

COLON TO NEW YORK.

Santa Marta	U. F. C.	Thursday	Feb.	8
Prinz August Wilhelm	H.-A.	Tuesday	Feb.	13
Turrialba	U. F. C.	Tuesday	Feb.	13
Metapan	U. F. C.	Thursday	Feb.	15
Sibiria	H.-A.	Monday	Feb.	19
Tivives	U. F. C.	Tuesday	Feb.	20
Orotava	R. M.	Tuesday	Feb.	20
Zacapa	U. F. C.	Thursday	Feb.	22
Prinz Eitel Friedrich	H.-A.	Tuesday	Feb.	27
Prinz Sigismund	H.-A.	Monday	Mar.	4
Magdalena	R. M.	Tuesday	Mar.	5
Prinz August Wilhelm	H.-A.	Tuesday	Mar	12
Thames	R. M.	Tuesday	Mar.	19

NEW ORLEANS TO COLON.

Parismina	U. F. C.	Wednesday	Feb.	7
Abangarez	U. F. C.	Wednesday	Feb.	14
Cartago	U. F. C.	Saturday	Feb.	10
Heredia	U. F. C.	Saturday	Feb.	17

COLON TO NEW ORLEANS

Heredia	U. F. C.	Thursday	Feb.	8
Parismina	U. F. C.	Thursday	Feb.	15
Atenas	U. F. C.	Thursday	Feb.	15
Cartago	U. F. C.	Thursday	Feb.	22
Abangarez	U. F. C.	Thursday	Feb.	22

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages. The *Altai* cabins are all sold at second cabin rates.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a.m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 2 p. m.; ships for New York via Kingston on Tuesdays at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

STATEMENT OF

CONSTRUCTION EXPENDITURES

TO DECEMBER 31, 1911

(Part II of The Canal Record, February 7, 1912.)

STATEMENT OF CONSTRUCTION EXPENDITURES TO DECEMBER 31, 1911.

Table No. 1.

Includes administrative and general expenses, but does not include general items or expenditures for sanitation, hospitals, or civil government.

ITEMS.	SECOND QUARTER, FISCAL YEAR 1912.			TO SEPT. 30, 1911			TOTAL TO DEC. 31, 1911.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
Atlantic Division—	*Cubic Yards.*								
1 Dry excavation, prism	170,837	$106,338.04	$0.6224	1,954,779	$1,330,028.27	$0.6804	2,125,616	$1,436,366.31	$0.6757
2 Hydraulic excavation, prism				29,605	11,671.32	$0.3942	29,605	11,671.32	$0.3942
3 Dredging excavation, prism	1,746,051	364,595.06	.2088	25,184,213	5,961,155.10	.2367	26,930,264	6,325,750.16	.2349
Gatun Spillway—									
4 Dry excavation				1,544,202	1,096,180.59	$0.7099	1,544,202	1,096,180.59	.7099
5 Preparing foundations	112	5,269.27	47.0470	39,189	82,599.32	2.1077	39,301	87,868.59	2.2358
6 Masonry	9,118	81,850.78	8.9768	158,382	1,256,014.43	7.9303	167,500	1,337,865.21	7.9813
7 Ironwork		885.66			20,773.48			21,659.14	
8 Back filling	3,577	1,497.84	.4187	21,136	10,958.34	.5185	24,713	12,456.18	.5400
Total		$89,503.55			$2,466,526.16			$2,556,029.71	
Gatun Dam—									
9 Dredging excavation				38,425	$20,041,19	$0.5216	38,425	$20,041.19	$0.5216
10 Dry filling	658,525	$377,267.61	$0.5729	8,082,646	3,361,721.73	.4159	8,741,171	3,738,989.34	.4277
11 Hydraulic filling	570,677	284,537.95	.4986	8,755,789	2,407,115.69	.2749	9,326,466	2,691,653.64	.2886
12 Paving				40,411	14,719.69	.3642	40,411	14,719.69	.3642
Total		$661,805.56			$5,803,598.30			$6,465,403.86	
Gatun Locks—									
13 Dry excavation				4,555,395	$3,080,613.71	$0.6763	4,555,395	$3,080,613.71	$0.6763
14 Dredging excavation		$16,999.99		488,533	109,591.73	.2243	488,533	126,591.72	.2591
15 Preparing foundations, excavation		1,595.77		195,313	389,588.96	1.9947	195,313	391,184.73	2.0029
16 Preparing foundations, filling		241.84		76,117	18,573.84	.2440	76,117	18,815.68	.2472
17 Preparing foundations, concrete piling, (lineal feet)	47,940	66,979.48	$1.3971	29,700	58,764.39	1.9786	77,640	125,743.87	1.6196
18 Preparing foundations, wooden piling, (lineal feet)	29,705	19,054.02	.6414	21,745	18,816.39	.8653	51,450	37,870.41	.7361
19 Masonry	141,133	1,153,732.32	8.1748	1,620,212	11,688,461.96	7.2142	1,761,345	12,842,194.28	7.2911
20 Ironwork		645,295.18			1,089,142.58			1,734,437.76	
21 Backfilling	292,660	142,826.94	.4880	795,409	420,688.31	.5289	1,088,069	563,515.25	.5179
22 Filling center wall	32,657	15,374.13	.4708	9,508	11,873.75	1.2488	42,165	27,247.88	.6462
23 Operating machinery		79,535.41			853.43			80,388.84	
Total		$2,141,635.08			$16,886,969.05			$19,028,604.13	
Gatun power plant, (permanent)									
24 Dry excavation				21,835	$13,711.63	$0.6280	21,835	$13,711.63	$0.6280
Gatun-Mindi Levee—									
25 Dry fill				177,158	$68,985.15	$0.3894	177,158	$68,985.15	$0.3894
26 Hydraulic fill				20,398	3,483.32	.1708	20,398	3,483.32	.1708
Total					$72,468.47			$72,468.47	
27 Colon breakwater	99,435	$206,422.77	$2.0760	488,168	$938,754.34	$1.9228	587,603	1,145,177.11	$1.9489
Total construction cost, Atlantic Division		$3,570,300.06			$33,484,882.64			$37,055,182.70	
28 Plant and equipment to be absorbed in construction costs after Dec. 31 1911								$2,343,698.56	
Total expenditures, Atlantic Division								$39,398,881.26	
Central Division—									
29 Dry excavation, prism	3,902,824	$2,414,906.29	$0.6188	81,524,091	$69,436,737.54	$0.8517	85,426,915	$71,851,643.83	$0.8411
30 Clearing Canal line, without excavation (acres)				2,280	139,316.41	61.1037	2,280	139,316.41	61.1037
31 Dredging excavation					9,798.40			9,798.40	
32 Masonry	144	577.23	4.0085	1,127	7,686.22	6.8201	1,271	8,263.45	6.5015
33 Masonry, cement gun facing (sq. yds.)	990	733.79	.7816	3,260	3,435.53	1.0538	4,250	4,169.32	.9810
Total construction cost Central Division		$2,416,217.31			$69,596,974.10			$72,013,191.41	
34 Plant and equipment to be absorbed in construction costs after Dec. 31 1911								$399,404.60	
Total expenditure, Central Division								$72,412,596.01	
Pacific Division—									
35 Dry excavation, prism	76,198	$61,379.27	$0.8055	573,003	$458,974.54	$0.8010	649,201	$520,353.81	$0.8015
36 Dredging excavation prism	655,659	187,209.64	.2855	29,982,585	7,281,610.27	.2429	30,638,244	7,468,819.91	.2438
37 Hydraulic excavation prism	164,843	110,668.93	.6714	483,664	279,783.65	.5785	648,507	390,452.58	.6021
Pedro Miguel Dam—									
38 Dry excavation	1,150	$1,451.75	$1.2624	4,074	$6,167.28	$1.5138	5,224	$7619.03	$1.4585
39 Dry filling	13,940	5,089.48	.3651	304,581	140,812.70	.4623	318,521	145,902.18	.4581
Total		$6,541.23			$146,979.98			$153,521.21	
Pedro Miguel Locks—									
40 Dry excavation	15,161	$8,293.38	$0.5470	1,035,080	$999,475.90	$0.9656	1,050,241	$1,007,769.28	$0.9596
41 Preparing foundations	19,336	35,278.54	1.8245	131,760	374,185.75	2.8399	151,096	409,464.29	2.7100
42 Masonry	59,619	384,116.46	6.4429	721,077	3,942,878 64	5.4680	780,696	4,326,995.10	5.5425
43 Ironwork		459,799.54			562,107.93			1,021,907.47	
44 Operating machinery		18,489.38						18,489.38	
45 Backfilling	112,915	41,488.60	.3674	338,792	150,404.07	.4439	451,707	191,892.67	.4248
46 Filling center wall	8,894	7,885.07	.8866	8,708	8,206.51	.9424	17,602	16,091.58	.9142
Total		$955,350.97			$6,037,258.80			$6,992,609.77	
Miraflores East Dam—									
47 Excavation		$797.66						$797.66	
Miraflores West Dam—									
48 Dry filling	92,780	$45,421.50	$0.4896	977,579	$508,728.08	$0.5204	1,070,377	$554,149.58	$0.5177
49 Hydraulic filling		580.62			29,703.83			30,284.45	
50 Masonry, core wall					429.51			429.51	
51 Dry excavation				14,536	19,991.26	1.3753		19,991.26	
Total		$46,002.12			$558,852.68			$604,854.80	

Table 1—(*Continued.*)

ITEMS.	SECOND QUARTER, FISCAL YEAR, 1912.			TO SEPT. 30, 1911.			TOTAL TO DEC. 30, 1911.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
Miraflores Spillway—									
52 Iron work					$1,460.21			$1,460.21	
Miraflores Locks—									
53 Dry escavation, diversions				5,885	$2,028.98	$0.3448	5,885	$2,028.98	$0.3448
54 Dry excavation, in locks	225,195	$164,987.41	$0.7326	1,877,043	1,822,027.47	.9707	2,102,238	1,987,014.88	.9452
55 Dredging excavation				309,647	142,379.66	.4598	309,647	142,379.66	.4598
56 Hydraulic excavation				332,703	195,299.02	.5870	332,703	195,299.02	.5870
57 Preparing foundations, excavation	58,179	88,947.60	1.5289	209,725	413,177.61	1.9701	267,904	502,125.21	1.8743
58 Preparing foundations, wooden piles		11,981.96						11,981.96	
59 Masonry	151,371	783,033.45	5.1729	420,489	2,073,800.57	4.9319	571,860	2,856,834.02	4.9957
60 Iron work		104,257.82			614,308.89			718,566.71	
61 Operating machinery		17,159.70						17,159.70	
62 Backfilling	148,143	56,234.57	.3796	612,749	147,811.14	.2412	760,892	204,045.71	.2682
Total		$1,226,602.51			$5,410,833.34			$6,637,435.85	
La Boca Locks and Dams—(abandoned)									
63 Dry excavation				78,233	$158,343.29	$2.0240	78,233	$158,343.29	$2.0240
64 Construction dam					315,350.07			315,350.07	
65 Construction locks					159,306.40			159,306.40	
Total					$632,999.76			$632,999.76	
66 Naos Island breakwater		$6,531.80			$58,773.33			$65,305.13	
Total constructioncost, Pacific Division		$2,601,084.13			$20,867,526.56			$23,468,610.69	
67 Plant and equipment to be absorbed in construction costs after Dec. 31, 1911								$2,205,067.37	
Totaexpenditures, Pacific Division								$25,673,678.06	
68 Lighting and buoying canal		$37,329.20			$32,978.75			$70,307.95	
Total expenditures, constr. and engr'n'g.								$137,555,463.28	

Item 27—*Colon Breakwater* Figures shown include fill from Toro Point and large rock from Porto Bello.
Item 31—*Dredging Excavation, Prism.* Preliminary surveys.
Item 33—Operation of cement gun used in facing walls of Cut.
Item 36—*Dredging Excavation, Prism.* With the accounts for the month of April 1911, the total cost of the dredging plant had been absorbed into the work hence no abitrary for plant is charged in this quarter.
Item 49—*Miraflores Dams, Hydraulic Filling.* Expenditures represent cost of pipe lines, flumes, etc. 661,048 cubic yards havebeen deposited in dams from dredging and hydraulic excavations in lock chamber and in the prism below the locks, the total expenditures therefor being charged to "Excavation".
Items 63, 64, and 65—These expenses were incurred prior to the adoption of Miraflores as the site for the lower locks and dams, at the Pacific entrance to the Canal.
Items 28, 34, and 67—*Plant.* The expenditures for plant and equipment are absorbed into construction costs on the basis of estimated total cost of plant, and the estimated quantities of work to be done. The amounts shown under these items represent the balances which are to be obsorbed into construction costs after December 31, 1911.
General—When excavated material is used in filling, such as dams, back filling, etc., the cost of dumping only is charged to the items benefited, all other expenses be charged to "Excavation".

DAM CONSTRUCTION.

Table No. 2.

Detailed cost per cubic yard for quarter ending December 31, 1911:

	GATUN DAM				MIRAFLORES DAM.				PEDRO MIGUEL DAM.			
	Oct.	Nov.	Dec.	Total	Oct.	Nov.	Dec.	Total	Oct.	Nov.	Dec.	Total
Dry Fill—Quanities—cubic yards	218,305	207,157	233,063	658,525	37,250	31,800	23,730	92,780	3,400	3,190	7,350	13,940
Clearing site	$0.0004	$0.0008		$0.0004								
Excavation	.0297	.0372	$0.0736	.0476								
Tracks	.0840	.0850	.0754	.0813	$0.0955	$0.0956	$0.1074	$0.0986	$0.1044	$0.0797	$0.0907	$0.0915
Trestles	.0066	.0161	.0036	.0085								
Transportation	.1378	.1301	.1189	.1287	.0830	.0803	.0674	.0780	.0246	.0150	.0198	.0199
Filling	.1325	.1307	.1290	.1307	.0254	.0435	.0646	.0416	.0878	.0408	.0531	.0587
Maintenance of equipment	.0384	.0468	.0246	.0362	.0480	.0774	.0445	.0573	.0229	.0176	.0487	.0353
Plant arbitrary	.0819	.0885	.0872	.0858	.1800	.1800	.1800	.1800	.1300	.1300	.1300	.1300
Division expense	.0173	.0168	.0144	.0161	.0109	.0104	.0137	.0114	.0154	.0086	.0102	.0111
Total division cost	$0.5286	$0.5520	$0.5267	$0.5353	$0.4428	$0.4872	$0.4776	$0.4669	$0.3851	$0.2917	$0.3525	$0.3465
Administrative and general expense	.0304	.0451	.0377	.0376	.0218	.0247	.0212	.0227	.0278	.0172	.0149	.0186
Total cost	$0.5590	$0.5971	$0.5644	$0.5729	$0.4646	$0.5119	$0.4988	$0.4896	$0.4129	$0.3089	$0.3674	$0.3651
Hydraulic Fill—Quanities—cubic yards	214,320	266,603	89,752	570,675								
Clearing site	$0.0004	$0.0008		$0.0005								
Clearing for dredge	.0163	.0081	$0.0296	.0146								
Dredging	.1650	.1212	.3159	.1683								
Relay pumps	.0053	.0124	.0354	.0133								
Pipe lines	.0268	.0224	.0604	.0301								
Wood flumes	.0033	.0013	.0037	.0024								
Power	.1128	.0573	.1643	.0950								
Small boats	.0020	.0018	.0103	.0032								
Maintenance of equipment	.0628	.0625	.1443	.0755								
Plant arbitrary	.0620	.0620	.0620	.0620								
Division expense	.0083	.0062	.0170	.0086								
Total division cost	$0.4650	$0.3560	$0.8429	$0.4735								
Administrive and general expense	.0164	.0223	.0540	.0251								
Total cost	$0.4814	$0.3783	$0.8969	$0.4986								
Concrete Core Wall—Dry excavation—Quanities—cubicyards											1,150	1,150
Excavation											$1.1088	$1.1088
Division expense											.0660	.0660
Total division cost											$1.1748	$1.1748
Administrative and general expense											.0876	.0876
Total cost											$1.2624	$1.2624

LOCKS AND SPILLWAYS CONSTRUCTION.

Table No. 3.

Detailed cost per cubic yard for quarter ending December 31, 1911:

ITEMS.	GATUN SPILLWAY.				GATUN LOCKS.				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS.			
	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total	Oct.	Nov.	Dec.	Total.
Dry excavation—Quantities—cubic yards										5,161	10,000	15,161	104,970	68,225	52,000	225,195
Drilling													$0.1003	$0.1309	$0.0995	$0.1094
Blasting													.0556	.0716	.0759	.0651
Loading by power										$0.1642	$0.1408	$0.1487	.1321	.1368	.1156	.1297
Tracks										.1364	.0751	.0960	.1226	.1333	.1226	.1259
Transportation										.0970	.0774	.0841	.0705	.0670	.0645	.0680
Dumps										.0084		.0029	.0005	.0001	.0027	.0009
Trestles																
Pumps										.0432	.0378	.0396	.0335	.0210	.0251	.0278
Power																
Maintenance of equipment										.1235	.1084	.1136	.0650	.1029	.0991	.0843
Plant arbitrary										.0012	.0013	.0012	.0400	.0400	.0400	.0400
Division expense										.0236	.0192	.0207	.0274	.0256	.0270	.0268
Total division cost										$0.5975	$0.4600	$0.5068	$0.6475	$0.7292	$0.6720	$0.6779
Admin. and general expense										.0531	.0336	.0402	.0544	.0614	.0466	0547
Total cost										$0.6506	$0.4936	$0.5470	$0.7019	$0.7906	$0.7186	$0.7326
Preparing foundations, excavation—Quantities—cubic yards.	112			112					5,365	7,801	6,170	19,336	5,144	25,555	27,480	58,179
Drilling									$0.3169	$0.1603	$0.4122	$0.2842	$0.0003	$0.0967	$0.0942	$0.0870
Blasting				$0.0266					.1133	.0896	.1016	.1000		.0497	.0718	.0557
Loading by power	$0.3696			2.2872					.1989	.1035	.1019	.1295		.0992	.0823	.0825
Loading by hand	4.4843			9.3599					.8524	.3729	.5163	.5517	1.8934	.3834	.5220	.5824
Transportation									.0312	.1061	.1087	.0861	.0672	.0640	.0839	.0737
Tracks				.0111					.1611	.2619	.1907	.2112	.1854	.1122	.2421	.1800
Dumps									.0130	.0128		.0088	.0034		.0405	.0194
Pumps									.0513	.0432	.0378	.0437	.0881	.0701	.1311	.1005
Coffer dams	.0089			27.9546												
Maintenance of equipment	.4813			1.1081					.1653	.1655	.1738	.1681	.1206	.1167	.1348	.1256
Plant arbitrary	.2000			.3429					.0080	.0012	.0012	.0030	0383	.0403	.0400	.0400
Division expense	.3604			1.8120					.1234	.0634	.0763	.0842	.1141	.0457	.0689	.0627
Total division cost	$5.9045			42.9024					$2.0348	$1.3804	$1.7205	$1.6705	$2.5108	$1.0780	$1.5116	$1.4095
Admin. and general expense	.5945			4.1446					.2246	.1366	.1146	.1540	.2256	.1062	.1117	.1194
Total cost	$6.4990			47.0470					$2.2594	$1.5170	$1.8351	$1.8245	$2.7364	$1.1842	$1.6233	$1.5289
Preparing foundations, concrete piling—Quantities—lin. ft.					3,990	26,895	17,055	47,940								
Concrete piles in place					$1.5130	$1.3181	$1.4260	$1.3727								
Maintenance of equipment					.0020	.0004	.0010	.0007								
Division expense					.0141	.0051	.0060	.0062								
Total division cost					$1.5291	$1.3236	$1.4330	$1.3796								
Admin. and general expense					.0291	.0150	.0188	.0175								
Total cost					$1.5582	$1.3386	$1.4518	$1.3971								
Preparing foundations, wooden piling—Quanities—lin. ft.					15,425	14,280		29,705								
Wooden piles in place					$0.6167	$0.5256		$0.5729								
Maintenance of equipment					.0005	.0002		.0004								
Division expense					.0051	.0027		.0039								
Total division cost					$0.6223	$0.5285		$0.5772								
Admin. and general expense					.0299	.1013		.0642								
Total cost					$0.6522	$0.6298		$0.6414								
Masonry.																
Concrete—Quantities—cubic yds.	2,990	2,228	3,364	8,582	45,723	38,008	36,567	120,298	24,161	18,008	9,107	51,276	60,420	41,427	48,122	149,969
Cement	$1 6997	$1.7817	$1.7402	$1.7369	$1.6236	$1.7459	$1.6088	$1.6578	$1.6519	$1.5531	$1.8229	$1.6476	$1.7104	$1.6721	$2.1117	$1.8285
Stone	1 8646	1.7399	1.4663	1.6761	2.0479	1.9524	1.6902	1.9090	.7533	.7626	.7533	.7566	.7399	.7626	.7533	.7505
Sand	8315	.8267	.9180	.8642	.9497	1.0032	1.3079	1.0755	.3854	.3995	.3948	.3920	.3854	.3995	.3948	.3923
Mixing	3601	.5009	.3294	.3846	.1428	.1751	.2078	.1727	.3388	.3216	.4191	.3470	.2168	.2997	.2696	.2566
Total cost	$4 7559	$4.8492	$4.4539	$4.6618	$4.7640	$4.8766	$4.8147	$4.8150	$3.1294	$3.0368	$3.3901	$3.1432	$3.0525	$3.1339	$3.5294	$3.2279
Large Rock—Quantities—cubic yards					1,424	1,014	308	2,746								
Cost					$1.2712	$2.4159	$9.4562	$2.6120								
Mosonry—Quantities—cubic yards	2,990	2,228	3,364	8,582	47,147	39,022	36,875	123,044	24,161	18,008	9,107	51,276	60,420	41,427	48,122	149,969
Concrete	$4 7559	$4.8492	$4.4539	$4.6618	$4.6201	$4.7500	$4.7745	$4.7076	$3.1294	$3.0368	$3.3901	$3.1432	$3.0525	$3.1339	$3.5294	$3.2279
Large rock					.0384	.0628	.0790	.0583								
Wood forms	1.4416	1.5250	.9672	1.2773	.3372	.4608	.5170	.4303	.5424	1.0155	.7149	.7392	.4923	.5482	.4267	4867
Steel forms					.1829	.1837	.2045	.1895	.0087		.0010	.0043	0105	.0339	.0321	.0239
Placing	.6454	1.0296	.7590	.7896	.4653	.5008	.4949	.4855	.3122	.4589	.7537	.4422	.1629	.2491	.2049	.2002
Reinforcements	0164	.0080	.1495	.0664	.0080	.0201	.0258	.0172		.0011		.0004				
Pumps		.0862		.0224	.0989	.1280	.0893	.1052	.0513	.0432	.0378	.0460	.0229	0210	.0251	.0231
Power					.1212	.1054	.0855	.1055	.0104	.0146	.0146	.0126	.0238	.0314	.0279	.0273
Coffer dams		.1612	.2033	.1216												
Maintenance of equipment	.2069	.6306	.5522	.4522	.2199	.2500	.2317	.2330	.1045	1098	.2055	.1243	.1388	.2570	.2025	.1919
Plant arbitrary	3960	.3960	.3960	.3960	.8800	.8800	.8800	.8800	1.0107	1.0133	1.0127	1.0119	.5300	.5300	.5300	.5300
Division expense	.1280	.1570	.1426	.1413	.0861	.0894	.0986	.0909	.0893	.1029	.1373	.1026	.0679	.0855	.0772	.0757
Total division cost	$7 5902	$8.8428	$7.6237	$7.9286	$7.0580	$7.4310	$7.4808	$7.3030	$5.2589	$5.7961	$6.2676	$5.6267	$4.5016	$4.8900	$5.0558	$4.7867
Admin. and general expense	4606	1.0174	.6366	.6741	.1840	.2993	.3167	.2603	.2425	.3544	.2509	.2833	.2069	.3037	.2427	.2452
Total cost	$8 0508	$9.8602	$8.2603	$8.6027	$7.2420	$7.7303	$7.7975	$7.5633	$5.5014	$6 1505	$6.5185	$5.9100	$4.7085	$5.1937	$5.2985	$5.0319

Table No. 3—(*Continued*)

ITEMS.	GATUN SPILLWAY.				GATUN LOCKS.				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS.			
	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.
Masonry, reinforced—Quantities—cubic yards	168	189	179	536	6,489	4,885	6,715	18,089	1,476	1,614	5,253	8,343	453	299	650	1,402
Cement	$1.6964	$1.7778	$1.7606	$1.7465	$1.9871	$2.3520	$2 2997	$2.2017	$2.4316	$2.19[illegible]1	$2.6154	$2.5006	$2.5850	$2.6048	$2.9564	$2.7614
Stone	1.8627	1.7425	2.0417	1.8801	2.3917	1.9323	1.8375	2.0619	.7211	.7296	.7209	.7226	1.2928	.9297	.7215	.9505
Sand	.8300	.8268	.9292	.8620	1.2419	1.0040	1.2976	1.1984	.3611	.3739	.3695	.3689	.6860	.5430	.3696	.5088
Mixing	.3601	.5010	.3293	.3995	.5848	.6030	.4849	.5526	.2026	.2676	.2752	.2609	.9946	3.8153	1.8119	1.9752
Wood forms	3.1093	3.3780	6.6704	4.3933	2.6324	3.5058	1.9447	2.6130	1.8758	1.9198	1.2330	1.4796	4.0585	3.6764	2.0893	3.0641
Steel forms					.2510	.1549	.0951	.1672					7.0239	3.3165	.8483	3.3700
Power							.0498	.0185	.0539	.0322	.0163	.0260		0228	.0045	.0070
Placing	1.0005	1.5958	.6113	1.0805	.5180	.4359	.5193	.4963	.6716	.7779	.5139	.5929	1.6304	2.4981	1.4725	1.7422
Reinforcements	1.2066	3.3892	1.7606	2.1612	1.3915	.7938	.8602	1.0328	.9601	2.1268	1.8099	1 7208	1.2129	4.6992	2.7722	2.6793
Pumps									.0513	.0431	.0378	.0412	.4359	0211	.1192	.2006
Maintenance of equipment	.2069	.6340	.5544	.4736	.2249	.0296	.2162	.1689	.1933	.1996	1834	.1883	.1748	.2477	.1994	.2017
Plant arbitrary	.3960	.3960	.3960	.3960	.8800	.8800	.8800	.8800	1.0442	1.0271	1.0141	1.0219	.5300	.5300	.5300	.5300
Division expense	.3229	.3156	.3934	.3438	.2614	.2298	.1750	.2208	.2864	.2535	.1914	.2202	.7607	.8524	.5520	.6835
Total division cost	10.9914	14.5567	15.4469	13.7365	12.3647	11.9211	10.6600	11.6121	$8.8530	$9.9412	$8.9808	$9.1439	21.3855	23.7570	14.4468	18.6743
Admin. and general expense	.5422	1.1411	1.9729	1.2312	.6067	.9685	.6539	.7219	.6212	.7454	.5077	.5738	1.7643	2.2688	1.1558	1.5898
Total cost	11.5336	15.6978	17.4198	14 9677	12.9714	12.8896	11.3139	12.3340	$9.4742	10.6866	$9.4885	$9.7177	23.1498	26.0258	15.6026	20.2641
Total Masonry—Quantities—cubic yards	3,158	2,417	3,543	9,118	53,[illegible]36	43,907	43,590	141,133	25,637	19,622	14,360	59,619	60,873	41,726	48,772	151,371
Total cost	$8.2361	10.3166	$8.7231	$8.9768	$7.[illegible]333	$8.3043	$8.3392	$8.1748	$5.7301	$6.5237	$7.6050	$6 4429	$4.8458	$5.3430	$5.4358	$5.1729
Back filling—Quantities—cubic yards		2,951	629	3,577	105,611	95,006	92,043	292,660	52,263	31,765	28,887	112,915	31,850	42,200	74,093	148.143
Drilling					$0.0078	$0.0204	$0.0198	$0.0157								
Blasting					.0218	.0296	.0271	.0260								
Loading					.0106	.0159	.0144	.0135								
Tracks			$0.3[illegible]	$0.1985	.0833	1812	0566	1067	$0.0725	$0.0955	$0.0447	$0.0718	$0.1129	$0.0574	$0.0503	$0.0425
Transportation			[illegible]9	.0151	.0234	.0557	.0372	0401	0084	.0301	0409	0228	.0601	0817	.0509	.0850
Filling		$0.1460		.1204	.1286	.0750	.1505	1130	.1792	.0482	0484	.1089	.1364	.0829	.0344	.0701
Maintenance of equipment			.0189	.0033	.0277	0329	.0452	0349	.0123	.0440	.0276	0251	.0300	.0627	.0321	.0404
Plant arbitrary			.0875	.0154	.0504	0902	.0865	.0747	.1100	.1100	1100	1100	.1100	.1100	.1100	.1100
Division expense		.0038	.0287	.0215	.0178	0185	0172	.0178	.0112	.0105	.0083	0103	.0172	.0120	.0076	.0109
Total division cost		0.1548	$0.6197	$0.3742	$0.3764	$0.5194	$0.4545	$0.4474	$0.3936	$0.3383	$0.2799	$0.3489	$0.4666	$0.4067	$0.2853	$0.3589
Admin. and general expense		.0204	.0704	0445	.0304	.0478	.0450	.0406	.0201	.0217	.0121	.0185	.0344	.0261	.0118	.0207
Total cost		$0 1752	$0.6901	$0.4187	$0 4068	$0.5672	$0.4995	$0 4880	$0.4137	$0.3600	$0 2920	$0.3674	$0.5010	$0.4328	$0.2971	$0.3796
Filling center wall—Quantities—cubic yards					9,129	470	23,058	32,657	3,537	2,223	3,134	8,894				
Loading																
Tracks							$0.0066	$0.0047	$0.0010			$0.0004				
Transportation							.0288	.0204	.0369	$0.0392	$0 0387	0381				
Filling					$0.3661	$3.6087	.0019	.1556	.4404	.5251	6172	5239				
Power									.0158	.0228	0176	0182				
Maintenance of eqiupment					.1705		.0078	.0532	.0595	.0249	.1482	.1880				
Plant arbitrary					.2170	.2170	.2170	.2170	.1222	.1279	1240	.0183				
Division expense					.0176	.0479	.0019	.0069	.0467	.0280	.0505	.0434				
Total division cost					$0.7712	$3.8736	$0.2640	$0.4578	$0.7225	$0.7679	$0.9962	$0.8303				
Admin. and general expense					.0292	.1115	.0046	.0130	.0442	.0538	.0716	.0563				
Total cost					$0.8004	$3.9851	$0.2686	$0.4708	$0 7667	$0 8217	$1.0678	$0.8866				

DRY EXCAVATION—PRISM.

Table No. 4.

Detailed cost per cubic yard for quarter ending December 31, 1911:

ITEMS.	ATLANTIC DIVISION.				CENTRAL DIVISION.				PACIFIC DIVISION.			
	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.
Dry excavation—Quantities—cubic yards	65,919	54,719	50,199	170,837	1,306,971	1,209,498	1,351,082	3,867,551	20,980	19,178	36,040	76,198
Clearing					$0 0004			$0.0001				
Drilling	.0130	$0.0049	$0 0495	$0 0211	0643	$0.0635	$0.0578	0618	$0.0645	$0.1592	$0.0951	$0.1028
Blasting	.0182	.0083	.0522	0250	0614	0641	.0705	0654	.0344	.0716	.0738	.0624
Loading	.0444	.0577	0607	0534	0516	0498	0447	0487	.0538	.1433	.1159	.1057
Tracks	0750	0581	.0730	0690	1113	1028	1066	1070	.0800	.1338	.1200	.1124
Transportation	.1131	1333	.1206	1218	0779	0928	0758	0818	.0901	0780	.0765	.0806
Dumps					0528	0574	.0543	0547	.0055		.0106	.0066
Pumps	0233	0322	0246	0265	0048	0035	0040	0041	.0377	0210	.0248	0274
Maintenance of equipment	.0508	.0640	0514	.0552	.1015	.0938	0885	.0946	.0806	.1116	.1030	.0990
Plant arbitrary	2000	.2000	2000	2000	0500	0500	0500	0500	.1307	.1300	.1300	.1302
Division expense	.0143	0142	0180	0154	.0144	0133	.0130	0136	.0260	.0270	.0267	.0266
Total division cost	$0.5521	$0 5727	$0 6500	$0 5874	$0.5904	$0.5910	$0.5652	$0.5818	$0.6033	$0 8755	$0.7764	$0.7537
Administrative and general expense	0241	.0357	0485	0350	0374	.0459	0354	.0394	.0499	.0661	.0454	.0518
Total cost	$0 5762	$0 6084	$0 6985	$0 6224	$0 6278	$0 6369	$0 6006	$0.6212	$0.6532	$0 9416	$0 8218	$0.8055
Dry excavation—Prism, by contract—Quantities—cubic yards					12,216	12,248	10,809	35,273				
Contract cost					$0.2919	$0 3098	$0.3130	$0 3045				
Plant arbitrary					.0500	0500	.0500	.0500				
Total cost					$0 3419	$0 3598	$0.3630	$0 3545				
Total dry excavation—Quantites—cubic yards	65,919	54,719	50,199	170,837	1,319,187	1,221,746	1,361,891	3,902,824	20,980	19,178	36,040	76,198
Unit cost	$0.5762	$0.6084	$0.6985	$0.6224	$0 6252	$0 6341	$0.5988	$0.6188	$0.6532	$0.9416	$0.8218	$0.8055

DREDGING EXCAVATION—PRISM.

Table No. 5.

Detailed cost per cubic yard for quarter ending December 31, 1911:

Items.	Atlantic Division.								Pacific Division.							
	October.		November.		December.		Total.		October.		November.		December.		Total.	
	Quantities, cu. yds.	Unit cost	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities cu. yds.	Unit cost.
Clearing	470,400	$0.0008	742,242	$0.0003	533,409	$0.0008	1,746,051	$0.0006	......	......	......	......	......	......	......	......
Op'n, seagoing suction dredge	121,440	.0276	301,201	.0317	291,669	.0375	714,310	.0334	209,244	$0.0547	209,530	$0.0450	10,498	$0.0672	429,272	$0.0503
R'p'rs, seagoing suction dredge	121,440	.1698	301,201	.0033	291,669	.0019	714,310	.0310	209,244	.0096	209,530	.0169	10,498	2.3586	429,272	.0706
Operation, ladder dredges	107,031	.0698	117,925	.0550	97,965	.0649	322,921	.0629	45,458	.0906	47,452	.0902	40,761	.1431	133,671	.1065
Repairs, ladder dredges	107,031	.0197	117,925	.0356	97,965	.0574	322,921	.03 0	45,458	.1660	47,452	.0460	40,761	.0420	133,671	.0856
Operation, dipper dredges	63,591	.1043	65,577	.0894	62,132	.1007	191,300	.0980	22,022	.1717	38,544	.1040	32,150	.1279	92,716	.1284
Repairs, dipper dredges	63,591	.1333	65,577	.1095	62,132	.0567	191,300	.1003	22,022	.1057	38,544	.0928	32,150	.0584	92,716	.0839
Operation, pipe line dredges	178,338	.0433	257,539	.0308	81,643	.0916	517,520	.0447	......	......	......	......	......	......	......	......
Repairs, pipe line dredges	178,338	.0261	257,539	.0158	81,643	.1141	517,520	.0349	......	......	......	......	......	......	......	......
Pipe lines	178,338	.0001	257,539	.0021	81,643	.0118	517,520	.0029	......	......	......	......	......	......	......	......
Dykes	178,338	*.0072	257,539	......	81,643	.0395	517,520	.0037	......	......	......	......	......	......	......	......
Op'n. tugs, clapets and scows	170,622	.0591	183,502	.0654	160,097	.0822	514,221	.0685	67,480	.1225	85,996	.0596	72,911	.0580	226,387	.0778
R'p'rs, tugs, clapets, and scows	170,622	.0473	183,502	.0540	160,097	.0613	514,221	.0541	67,480	.1154	85,996	.0284	72,911	.0079	226,387	.0477
Drilling	37,747	.1178	38,980	.0873	49,385	.0235	126,112	.0714	26,709	......	33,975	.0133	48,030	*.0008	108,714	.0038
Blasting	37,747	.1763	38,980	.1159	49,385	.0768	126,112	.1187	26,709	......	33,975	.0009	48,030	.0001	108,714	.0003
Operation, drill barges	......	......	......	......	......	......	......	......	26,709	.3965	33,975	.2575	48,030	.1673	108,714	.2518
Operation, rock breakers	......	......	......	......	......	......	......	......	26,709	.0470	33,975	.0327	48,030	.0341	108,714	.0368
Small boats	470,400	.0019	742,242	.0015	533,409	.0020	1,746,051	.0018	276,724	.0039	295,526	.0027	83,409	.0069	655,659	.0037
Repairs, misc. equipment	470,400	.0009	742,242	.0007	533,409	.0010	1,746,051	.0008	276,724	.0059	295,526	.0108	83,409	.0152	655,659	.0093
Plant arbitrary	470,400	.0450	742,242	0450	533,409	.0450	1,746,051	.0450	276,724	......	295,526	......	83,409	......	655,659	......
Division expense	470,400	.0075	742,242	.0034	533,409	.0051	1,746,051	.0050	276,724	.0076	295,526	.0048	83,409	.0184	655,659	.0077
Total division cost	470,400	$0.2454	742,242	$0.1541	533,409	$0.2079	1,746,051	10.1951	276,724	$0.2310	295,526	$0.1703	83,409	$0.6814	655,659	$0.2609
Admin and general expense	470,400	.0132	742,242	0118	533,409	.0167	1,746,051	.0137	276,724	.0243	295,526	.0170	83,409	.0524	655,659	.0246
Total cost	470,400	$0.2586	742,242	$0.1659	533,409	$0.2246	1,746,051	$0.2088	276,724	$0.2553	295,526	$0.1873	83,409	$0.7338	655,659	$0.2855
Earth excavation—per cent.	432,653	91.98	703,262	94.75	484,024	90.74	1,619,939	92.78	250,015	90.35	261,551	88.50	35,379	42.42	546,945	83.42
Rock excavation—per cent.	37,747	8.02	38,980	5.25	49,385	9.26	126,112	7.22	26,709	9.65	33,975	11.50	48,030	57.58	108,714	16.58

*Denotes credit.

STONE PRODUCTION.

Table No. 6.

Detailed cost per cubic yard for quarter ending December 31, 1911:

	Porto Bello Quarry.				Ancon Quarry.			
	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.
Quarrying—Quantities—cubic yards	43,638	43,193	42,247	129,078	64,446	60,430	66,101	190,977
Stripping	$0.0228	$0.0080	$0.0161	$0.0051	$0.0180	$0.0090	$0.0091	$0.0121
Drilling	.0486	.0440	0532	.0486	.0556	.0557	.0515	.0543
Blasting	.1781	.1903	.1590	.1759	.0317	.0555	.0401	.0421
Loading	.0780	.0716	.0763	.0753	.0347	.0415	.0309	.0356
Transportation	.0738	.0644	.0705	.0696	.0447	.0497	.0468	.0470
Tracks	.0404	.0366	0428	.0400	.0496	.0378	.0362	.0412
Power	.0374	.0362	.0375	.0370	......	......	......	......
Maintenance of equipment	.1402	.0304	.0803	.0838	.0376	.0563	.0334	.0420
Plant arbitrary	.4170	.4170	.4170	.4170	.2400	.2400	.2400	.2400
Total	$1.0363	$0.8985	$0.9205	$0.9523	$0.5119	$0.5455	$0.4880	$0.5143
Crushing—Quantities—cubic yards	43,638	43,193	42,247	129,078	64,446	60,430	66,101	190,977
Operation, crushers	$0.0280	$0.0230	$0.0255	$0.0255	$0.0165	$0.0184	$0.0151	$0.0166
Stone bins and conveyors	.0129	.0120	.0159	.0136	.0038	.0040	.0036	.0038
Power	.0481	.0466	.0483	.0476	.0167	.0210	.0187	.0188
Maintenance of equipment	.0816	.0589	.0640	.0683	.0250	.0139	.0393	.0264
Plant arbitrary	.2150	.2150	.2150	.2150	.0742	.0754	.0752	.0749
Total	$0.3856	$0.3555	$0.3687	$0.3700	$0.1362	$0.1327	$0.1519	$0.1405
Total cost of production	$1.4219	$1.2540	$1.2892	$1.3223	$0.6481	$0.6782	$0.6399	$0.6548
Towing—Quantities—cubic yards	43,638	43,193	42,247	129,078	......	......	......	......
Operation, tugs and barges	$0.1379	$0.1583	$0.2039	$0.1663	......	......	......	......
Maintenance of equipment	.0529	.1374	.1546	.1145	......	......	......	......
Plant arbitrary	.2220	.2220	.2220	.2220	......	......	......	......
Total	$0.4128	$0.5177	$0.5805	$0.5028	......	......	......	......
Unloading—Quantities—cubic yards	43,638	43,193	42,247	129,078	......	......	......	......
Operation, cableways and cranes	$0.0869	$0.1101	$0.0783	$0.0919	......	......	......	......
Power	.0150	.0192	.0248	.0196	......	......	......	......
Maintenance of equipment	0593	.1023	.0347	.0656	......	......	......	......
Plant arbitrary	.2680	.2680	.2680	.2680	......	......	......	......
Total	$0.4292	$0.4996	$0.4058	$0.4451	......	......	......	......
Rail transportation to storage—Quantities—cubic yards	19,410	13,844	12,684	45,938	64,446	60,430	66,101	190,977
Operation of trains	$0.1033	$0.2053	$0.1478	$0.1462	$0.0348	$0.0400	$0.0346	$0.0364
Repairs to tracks	.0163	.0324	.0928	.0423	......	......	......	......
Dumping in storage	......	......	......	......	.0071	.0163	.0110	.0113
Maintenance of equipment	.0760	.1176	.1210	.1010	.0179	.0305	.0206	.0228
Plant arbitrary	......	......	......	......	.0700	.0700	.0700	.0700
Total	$0.1956	$0.3553	$0.3616	$0.2895	$0.1298	$0.1568	$0.1362	$0.1405
Division expense	$0.0288	$0.0225	$0.0234	$0.0249	$0.0150	$0.0158	$0.0148	$0.0152
Total cost in storage	$2.3797	$2.4076	$2.4074	$2.3981	$0.7929	$0.8508	$0.7909	$0.8105

SAND PRODUCTION.

Table No. 7.

Detailed cost per cubic yard for quarter ending December 31, 1911

Items.	Nombre de Dios.				Chamé.			
	Oct.	Nov.	Dec.	Total	Oct.	Nov.	Dec.	Total.
Dredging—Quantities—cubic yards	39,444	19,948	....	59,392	45,789	35,803	42,201	123,793
Operation dredges	$0.1488	$0.1843	....	$0.1609	$0.0859	$0.1172	$0.1316	$0.1106
Maintenance of equipment	.0344	.0927	....	.3064	.0206	.1523	.0218	.0590
Total	$0.1832	$0.2770	....	$0.4673	$0.1065	$0.2695	$0.1534	$0.1696
Plant arbitrary	$0.7890	$0.7890	....	$0.7890	$0.0300	$0.0300	$0.0300	$0.0300
Total cost of production	$0.9722	$1.0660	....	$1.2563	$0.1365	$0.2995	$0.1834	$0.1996
Towing—Quantities—cubic yards	39,444	19,948	....	59,392	45,789	35,803	42,201	123,793
Operation, tugs and barges	$0.2048	$0.2449	....	$0.2202	$0.0933	$0.0967	$0.0889	$0.0928
Maintenance of equipment	.0832	.1140	....	.0976	.0281	.0301	.0378	.0320
Plant arbitrary	.2820	.2820	....	.2820	.0500	.0500	.0500	.0500
Total	$0.5700	$0.6409	....	$0.5998	$0.1714	$0.1768	$0.1767	$0.1748
Jnloading—Quantities—cubic yards	39,414	19,948	....	59,392	45,789	35,803	42,201	123,793
Operation, cableways and cranes	$0.0845	$0.1042	....	$0.0949	$0.0576	$0.0810	$0.0746	$0.0702
Power	.0198	.0106	....	.1437	.0230	.0273	.0231	.0243
Maintenance of equipment	.0672	.0746	....	*.0566	.0345	.0148	.0158	.0224
Plant arbitrary	.2170	.2170	....	.2170	.0831	.0837	.0832	.0833
Total	$0.3885	$0.4064	....	$0.3990	$0.1982	$0.2068	$0.1967	$0.2002
Rail Transportation to Storage—Quantities—cubic yards	12,061	11,705	....	23,766	45,789	35,803	42,201	123,793
Operation of trains	$0.1032	$0.0874	....	$0.0954	$0.0373	$0.0464	$0.0396	$0.0407
Repairs to tracks	.0163	.0138	....	.0151	.0633	.1011	.0336	.0641
Dumping in storage	....	....	....	....	.0152	.0128	.0110	.0131
Maintenance of equipment	.0760	.0500	....	.0632	.0198	.0372	.0241	.0263
Plant arbitrary	....	....	....	....	.0900	.0900	.0900	.0900
Total	$0.1955	$0.1512	....	$0.1737	$0.2256	$0.2875	$0.1983	$0.2342
Division expense	$0.0059	$0.0131	....	$0.0083	$0.0148	$0.0207	$0.0125	$0.0157
Total cost in storage	$1.9964	$2.2151	....	†$2.5013	$0.7465	$0.9913	$0.7676	$0.8245

*Indicates credit.

†There was a charge to Sand Production of $15,623.55 in the month of December. As no sand was produced no unit costs are shown for that month but the cost for the quarters show an increase.

HYDRAULIC EXCAVATION—PRISM.

Table No. 8.

Detailed cost per cubic yards for quarter ending December 31, 1911.

Items.	Atlantic Division.				Pacific Division.			
	Oct.	Nov.	Dec.	Total.	Oct.	Nov.	Dec.	Total.
Quantities—cubic yards	....	....	....	....	56,500	50,563	57,780	164,843
Clearing	....	....	....	....	....	....	$0.0008	$0.0003
Drilling	....	....	....	....	$0.0170	$0.0240	.0006*	.0130
Blasting	....	....	....	....	.0236	.0115	.0065	.0139
Pumping station	....	....	....	....	.1191	.1152	.1005	.1114
Pipe lines and monitors	....	....	....	....	.0226	.0357	.0803	.0469
Dredging pumps	....	....	....	....	.0849	.1180	.0883	.0962
Relay pumps	....	....	....	....	....	....	....	....
Dykes	....	....	....	....	*.0950	.0145	.0373	*.0150
Maintenance of equipment	....	....	....	....	.1044	.0923	.1213	.1066
Power	....	....	....	....	.1450	.1368	.1340	.1386
Plant arbitrary	....	....	....	....	.1031	.1025	.1025	.1027
Division expense	....	....	....	....	.0201	.0185	.0173	.0186
Total division cost	....	....	....	....	$0.5448	$0.6690	$0.6882	$0.6332
Administrative and general expense	....	....	....	....	.0336	.0464	.0355	.0382
Total cost	....	....	....	....	$0.5784	$0.7154	$0.7237	$0.6714

*Indicates credit.

MANUFACTURING CONCRETE PILES.

Table No. 9.

Items.	Atlantic Division.			
	Oct.	Nov.	Dec.	Total.
Quantities—lineal feet	31,140	29,850	....	60,990
Cement	$0.0838	$0.0845	....	$0.0842
Stone	.0613	.0661	....	.0637
Sand	.0090	.0083	....	.0086
Mixing	.0296	.0527	....	.0409
Placing	.0456	.0382	....	.0420
Reinforcements	.7123	.7052	....	.7088
Forms	.0592	.0293	....	.0446
Maintenance of equipment	.0044	.0007	....	.0018
Plant arbitrary	.1810	.1810	....	.1810
Division expense	.0097	.0105	....	.0101
Total cost	$1.1959	$1.1751	....	$1.1857

*Indicates credit.

COLON BREAKWATER.

Table No. 10.

Items.	Colon Breakwater.			
	Oct.	Nov.	Dec.	Total.
Toro Point Fill.				
Excavation—Quantities—Cubic yards	21,815	17,249	46,591	85,655
Surveys	$0.0013	$0.0012	....	$0.0006
Clearing	....	....	....	....
Drilling	....	....	$0.0116	.0063
Blasting	.0110	.0334	.0327	.0273
Loading by power	.0890	.1119	.0778	.0875
Tracks	.0617	.0712	.0106	.0359
Transportation	.0733	.1058	.0724	.0794
Maintenance of equipment	.0678	.2474	*.0365	.0472
Total	$0.3041	$0.5709	$0.1686	$0.2842
Filling—Quantities—Cubic yards	21,815	17,249	46,591	85,655
Trestles	$0.5275	$1.6023	$0.5150	$0.7371
Dumping	.0187	.0137	.0140	.0151
Maintenance of equipment	.0291	.0142	.0395	.0317
Total	$0.5753	$1.6302	$0.5685	$0.7839
Plant arbitrary	$0.3100	$0.3100	$0.3100	$0.3100
Division expense	.0392	.0458	.0202	.0302
Tug service	.1076	.2050	.0653	.1042
Total division cost	$1.3362	$2.7619	$1.1326	$1.5125
Administrative and general expenses	.0734	.3947	.1046	.1551
Total cost filling	$1.4096	$3.1566	$1.2372	$1.6676
Porto Bello Large Rock				
Quarrying—Quantities—cubic yards	3,484	4,117	6,179	13,780
Stripping	$0.1182	$0.0849	$0.6543	$0.3487
Drilling	.3824	.1893	.1762	.2322
Blasting	.4772	.3929	.2950	.3703
Loading	.3273	.2095	.1889	.2300
Transportation	.2848	.2539	.1759	.2267
Porto Bello Large Rock—*Continued.*				
Tracks	.3839	.3898	.3502	.3706
Loading on barges	.1620	.1438	.1288	.1418
Power	.1039	.0842	.0569	.0769
Maintenance of equipment	.8570	.6924	.4634	.6313
Plant arbitrary	.2690	.2690	.2690	.2690
Total	$3.3657	$2.7097	$2.7586	$2.8975
Towing—Quantities—cubic yards	3,484	4,117	6,179	13,780
Operation, tugs and barges	$0.2364	$0.2657	$0.4169	$0.3260
Maintenance of equipment	.0330	.0834	.0452	.0536
Plant arbitrary	.4930	.4930	.4930	.4930
Total	$0.7624	$0.8421	$0.9551	$0.8726
Placing—Quantities—cubic yards	3,484	4,117	6,179	13,780
Operation of floating derricks	$0.0130	....	....	$0.0033
Operation, cranes	.1759	$0.1519	$0.1038	.1364
Operation, trains	.0316	.0314	.0704	.0489
Dumping	.0097	.0483	.0163	.0242
Maintenance of equipment	.0896	.0772	.0588	.0721
Plant arbitrary	.1400	.1400	.1400	.1400
Total	$0.4598	$0.4488	$0.3893	$0.4249
Division expense	$0.1573	$0.1192	$0.1252	$0.1315
Total division cost	$4.7452	$4.1198	$4.2282	$4.3265
Administrative and general expense	.2609	.2806	.3072	.2876
Total cost, large rock	$5.0061	$4.4004	$4.5354	$4.6141
Total material placed—Quantities—cubic yds	25,299	21,366	52,770	99,435
Total cost	$1.9049	$3.3963	$1.6234	$2.0760

*Indicates credit.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, FEBRUARY 14, 1912. No. 25.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

New Developments in Culebra Cut Slides.

On the afternoon of February 10 a portion of the bank of Culebra Cut below the old French 90-meter level, on the east side of the Cut, opposite the village of Culebra and about 500 yards north of Gold Hill, broke off, carrying away the 95-foot berm and partly closing the recently completed drainage ditch in this locality. All tracks in the pioneer cut and to the eastward of it will have to be regraded and rebuilt. The amount of material in motion in this slide is about 250,000 cubic yards, but other cracks have opened to the south and east of the broken mass, on the old French 90-meter level, which apparently indicate that there will be a considerable addition in the near future, possibly as much more. The closing of tracks on the east side of the Cut will lessen the output for some days to come.

The old slide on the north end of the French dump on the west side of the Cut at Culebra has renewed its activity after a quiescence of over two years. It is estimated that 750,000 cubic yards of material are in motion. The boundary of the moving mass corresponds closely to that of the clay slide which moved into the Canal about two years ago, leaving underneath it stratified rock sloping about one on ten towards the Canal. This stratified mass has apparently broken off in a mass, 30 or 40 feet high on the face, and is advancing towards the prism at the rate of 18 to 24 inches a day. The ground has not heaved up in the bottom of the Cut. The material is easily handled.

Canal Work in January.

The grand total of Canal excavation to February 1 was 160,591,180 cubic yards, leaving to be excavated 34,732,199 cubic yards, or about one-fifth of the entire amount for the completed Canal.

The total for January was 2,641,444 cubic yards, as compared with 2,772,170 cubic yards in January, 1911.

The dry excavation amounted to 1,655,328 cubic yards, and was principally by steam shovels. The dredges removed 924,823 cubic yards, 991 cubic yards were sluiced in the Central Division, and 60,302 cubic yards at Miraflores, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 607,502 cubic yards. Of this total, 34,495 cubic yards were dry excavation, and the remainder was removed by dredges in the Atlantic entrance.

The total excavation in the Central Division was 1,452,840 cubic yards, all of which was from the prism. The amount taken from Culebra Cut was 1,416,035 cubic yards, as compared with 1,350,497 cubic yards in January, 1911.

In the Pacific Division, the total excavation was 581,102 cubic yards, 351,816 cubic yards of which were taken out by dredging at the Pacific entrance.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Locks, Dam and Spillway	1,330	....	1,330
Mindi	33,165	....	33,165
Total	34,495	....	34,495
Wet excavation—			
Atlantic entrance	520,228	....	520,228
Locks, Dam and Spillway	....	40,434	40,434
East Diversion	....	12,345	12,345
Total	520,228	52,779	573,007
Total wet and dry excavation	554,723	52,779	607,502
CENTRAL DIVISION.			
Dry excavation—			
Culebra Cut	1,416,035	....	1,416,035
Obispo Diversion	27,366	8,448	35,814
Wet excavation—			
Chagres section	991	....	991
Total	1,444,392	8,448	1,452,840
PACIFIC DIVISION.			
Dry excavation—			
Locks, Dams and Spillways	120,578	....	120,578
Diversions	....	....	....
Prism, south of Pedro Miguel Locks	48,406	....	48,406
Total	168,984	....	168,984
Wet excavation—			
Pacific entrance	412,118	....	412,118
Miraflores Locks	....	....	....
Diversions	....	....	....
Total	412,118	....	412,118
Total wet and dry excavation	581,102	....	581,102
TOTAL CANAL EXCAVATION.			
Dry excavation	1,646,880	8,448	1,655,328
Wet excavation	933,337	52,779	986,116
Total	2 580,217	61,227	2 641 444

Mean rainfall along Canal (ten stations), 0.22 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc.; that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks.	34,983	63,493	98,476
Concrete laid in dams and spillways	8,905	....	8,905
Fill placed in dams	413,166	62,964	476,130

Channel through Miraflores Lake.

Operations have begun for the final excavation of the canal channel from Pedro Miguel Lock, through Miraflores Lake, to Miraflores Locks, a distance of 1¼ miles. A trench is being cut from the southern end of the lake area, intersecting a curve of the Rio Grande, to afford drainage for the prism. The area to be occupied by the channel is being cleared of brush, and a steamshovel has begun excavating immediately south of the site of the southwest wing wall at Pedro Miguel, and is working toward the lower end of the lake. The channel will be 500 feet wide. Inasmuch as the surface of Miraflores Lake is to be 55 feet above sealevel, the channel will have to be excavated only to an elevation of 10 feet, and as a considerable part of it is naturally at or below that level the excavation within this stretch will hardly exceed 800,000 cubic yards. The spoil will be used in the construction of Pedro Miguel Dam and for backfilling at the locks.

Extension of Backfilling at Gatun.

The backfilling along the locks at Gatun has been extended over a hundred feet at the lower end to afford foundation for the tracks on which move the towers of the cableways which are used for placing concrete in the walls. By this means the cables will be used in the construction of the extreme lower end of the center wall, the forms for the lower part of which have been placed since the completion of the bulkhead across the lower end of the locks. The backfill on the east side is practically completed for the upper and middle locks, while along the lower lock it has yet to be raised about 8 feet and later will be extended in conformation with the wing wall. On the west side the fill is completed for the upper lock and well advanced for the lower chambers.

Towing and Return Tracks at Locks.

The laying of rack and return tracks for the towing locomotives to be used in passing through the locks is in progress at Gatun and Pedro Miguel. At the latter lock about 400 feet of return track have been laid on top of the center wall, and preparations are being

NOTES OF PROGRESS.

(*Continued.*)

made for placing the two towing tracks, which parallel the common return track. At Gatun 16 sections of both towing and return track have been completed on the east side wall of the upper lock; 92 other sections, on the east and west walls of the upper lock, have been made ready for the placing of the concrete in which the tracks are embedded.

Each section is 6 feet long, and the weight of the completed rack track, exclusive of the concrete, is 1,460 pounds per section; for the return track, 720 pounds. About 330 tons of track are ready for the placing of concrete. The outer rail of the towing track is 4 feet 3 inches from the edge of the wall, except at the indented recesses for the lock gates. Over these the track projects about four and a half feet, being supported on seven irregular cantilever girders, averaging 11 feet 10 inches in length, the inner ends of which are anchored into the wall by means of vertical rods passing through the ends of the girders.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 79 per cent completed, 179,460 cubic yards, out of a total of 225,000, having been placed at the close of work on February 10. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Rock.	Hours worked	No. Mixers.
February 5...	444	....	16.00	2
February 6...	448	13	16.00	2
February 7...	400	....	16.00	2
February 8...	342	13	16.00	2
February 9...	384	....	15.00	2
February 10...	412	....	16.00	2
Total.......	2,430	26	95.00	2
Previously reported.....	176,905	99		
Aggregate...	179,335	125		
Grand total..	179,460			

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending February 10, follows:

DATE.	Hours worked.	Cubic Yards.
February 5....................	3.02	2,000
February 6....................	3.30	1,681
February 7....................	7.00	1,763
February 8....................	3.30	1,760
February 9....................	3.30	1,772
February 10....................	1.15	561
Total..........................	21.47	9,537

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending February 10, follows:

DATE.	Hours worked.	Cubic Yards.
February 5....................	5.30	1,870
February 6....................	6.30	2,085
February 7....................	6.15	2,186
February 8....................	6.50	2,292
February 9....................	4.05	2,129
February 10....................	6.25	1,858
Total..........................	35.35	12,420

Parlor Car Service.

In the operation of trains on the Panama railroad according to Schedule 11, in effect February 15, the parlor car will be operated only on trains 4 and 7, leaving Panama at 10.40 a. m., and Colon at 4.35 p. m., respectively

Explosion in Barge Causes Death.

Henry Ainsworth, Jamaican, employed at the Mount Hope marine shops, was asphyxiated on February 9 about 7.45 p. m. in an explosion of gas in the hold of Barge No. 10, one of the barges that are being towed around South America from Colon to Balboa. He and other laborers were using gasoline in cleaning off the inside of the barge when in some manner unknown the explosion occurred. Seven men were injured, two of them seriously. No property damage resulted.

CONCRETE WORK IN THE LOCKS.

Over 78 per cent of the concrete for the locks is in place, the amount at the close of work on February 10 being 3,287,064 cubic yards, out of a total of approximately 4,199,400. A total of 24,326 cubic yards of concrete was laid in the locks during the week ending February 10.

GATUN LOCKS.

Over 90 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on February 10 being 1,811,915 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending February 10, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
February 5..........................	762	13.15	5	292	3.40	2	....	1,103½
February 6..........................	578	9.32	2	160	1.40	1	....	762
February 7..........................	682	11.15	4	40	.40	1	....	743½
February 8..........................	842	14.45	5	272	3.40	2	....	1,149½
February 9..........................	850	13.35	5	464	5.40	2	....	1,386
February 10..........................	758	12.45	6	130	1.40	1	....	937½
*Portable mixers..............	....	....	......	252	....	......	....	....
Total..........................	4,472	75.07	4.5	1,610	17.00	1.5	......	6,082
Previously reported..............	....	....	......	....	....	......	....	1,805,833
Grand total..........................	....	....	......	....	....	......	....	1,811,915

*The 252 yards shown for the portable mixers (of which 146½ yards are reinforced concrete) were placed on the following days: February 5th, 49½; February 6th, 24; February 7th, 21½; February 8th, 35½; February 9th, 72; February 10th, 49½.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 96 per cent completed, 811,346 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on February 10. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
February 5..........................	530	15.50	2	231	21.75	4	....	761
February 6..........................	430	13.50	2	168	14.00	4	....	598
February 7..........................	454	14.00	2	146	11.50	3	....	600
February 8..........................	346	10.50	2	93	7.50	2	....	439
February 9..........................	284	8.50	2	250	24.75	4	....	534
February 10..........................	424	12.50	2	320	38.00	5	....	744
Total..........................	2,468	74.50	2	1,208	117.50	3.67	....	3,676
Previously reported..............	....	....	......	....	....	......	4,423	807,670
Grand total..........................	....	....	......	....	....	......	4,423	811,346

MIRAFLORES LOCKS.

Over 48 per cent of the concrete for the system of two twin locks at Miraflores was in place on February 10, the total amount on that date being 663,803 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.	*Cu. Yds.*								*Cu. Yds.*	*Cu. Yds.*
Feb. 5....	2,244	59.83	8	220	3.33	2	42	3.00	1	....	2,506
Feb. 6....	2,074	51.67	8	156	2.33	1	76	3.50	1	....	2,306
Feb. 7....	1,912	53.67	8	258	4.17	2	210	12.00	2	....	2,380
Feb. 8....	2,040	47.83	8	408	6.08	2	300	20.75	3	....	2,748
Feb. 9....	1,614	39.92	8	388	6.17	2	326	23.00	3	....	2,328
Feb. 10....	1,902	48.75	8	110	1.75	2	288	22.00	3	....	2,300
Total...	11,786	301.67	8	1,540	23.83	1.83	1,242	84.25	2.16	....	14,568
Previously reported..	....	....	......	....	....	......	....	....	......	3,693	649,235
Grand total.....	....	....	......	....	....	......	....	....	......	3,693	663,803

STEAMSHOVEL RECORDS.

Work of Central Division and Panama Railroad Shovels.

During the month of January the total amount of material excavated in the Central Division was 1,452,840 cubic yards, of which 241,035 cubic yards were classified as earth, and 1,211,805 cubic yards, as rock.

Of this quantity 1,421,133 cubic yards were removed by steamshovels, 23,168 cubic yards by cranes, contractors removed 991 cubic yards by sluicing, and 7,548 cubic yards by hand.

The high record for the month was made by shovel No. 256 working 26 days in the Culebra District, which excavated 55,095 cubic yards of rock.

The second best record for the month was made by shovel No. 227, working 26 days in the Culebra District, which excavated 48,714 cubic yards of rock.

The best record for a shovel of the seventy-ton class was made by shovel No. 126, working 25 days in the Culebra District, which excavated 40,480 cubic yards of earth and rock.

Shovel No. 212, working in the Culebra District, made a high record for one day by excavating 2,964 cubic yards of rock on January 29.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best record for the month and for one day are shown in the following table:

BEST RECORDS FOR THE MONTH.

Shovel No.	Cubic Yards. Earth.	Rock.	Total.	No. of days at work.
EMPIRE DISTRICT.				
201	....	44,056	44,056	26
211	....	43,198	43,198	26
215	....	38,731	38,731	26
CULEBRA DISTRICT.				
256	....	55,095	55,095	26
227	....	48,714	48,714	26
230	....	46,750	46,750	26
PEDRO MIGUEL.				
122	7,289	2,500	9,789	9
231	....	30,856	30,856	23½

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
211	Empire	Jan. 22	Rock	2,766
211	Empire	Jan. 27	Rock	2,684
205	Empire	Jan. 17	Rock	2,587
212	Culebra	Jan. 29	Rock	2,964
212	Culebra	Jan. 30	Rock	2,945
224	Culebra	Jan. 12	Rock	2,918
227	Culebra	Jan. 11	Rock	2,918
231	Pedro Miguel	Jan. 26	Rock	2,888

Relocated Line of Panama Railroad.

The total steamshovel excavation on the relocated line of the Panama railroad amounted to 320,035 cubic yards in January.

The best month's record was made by steamshovel No. 257, working on the Gatun Section, which excavated 4,000 yards of earth and 55,780 yards or solid rock, a total of 59,780 cubic yards.

In the 70-ton class, the best month's record was made by steamshovel No. 128, working near Empire, which excavated 35,550 cubic yards of earth.

The best day's record for shovels with a 5-yard dipper was made by steamshovel No. 257, which excavated 3,130 cubic yards of rock on January 13.

The best day's record for shovels with a 3-yard dipper was made by steamshovel No. 128 which excavated 1,930 cubic yards of earth on January 25.

Month's records are place measurement, and day's records are car measurement. All material was loaded in 10-yard Western dump cars.

BEST RECORDS FOR THE MONTH.

Shovel No.	Location.	Days worked.	Cubic Yards by Cross Section. Earth.	Rock.	Total.
257	Gatun	26	4,000	55,780	59,780
262	M'nte Lirio	26	....	43,500	43,500
266	Paraiso	26	8,500	34,560	43,060
263	Paraiso	26	38,375	3,630	42,005
128	Empire	26	35,550	....	35,550

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
257	Gatun	Jan. 13	Rock	3,130
266	Paraiso	Jan. 24	Earth and rock	2,960
263	Paraiso	Jan. 27	Earth	2,900
262	Monte Lirio	Jan. 25	Rock	2,600
128	Empire	Jan. 25	Earth	1,930
123	Empire	Jan. 10	Earth	1,660

Total steamshovel output during the month of January, 320,035 cubic yards.

Total number of steamshovel working days, 227.7

Average output per working day, 1,406 cubic yards.

Steamshovel No. 225, Cristobal Terminal Docks.

The following statement shows the performance of Steamshovel No. 225, for the month of January, 1912. This steamshovel is working in the borrow pit at Folks River, excavating rock for filling the mole at the Cristobal Terminal Docks:

QUANTITIES OF EXCAVATION (90% ROCK, 10% EARTH).

	Cubic Yards.
By car measurement	60,210
By cross sections	59,530
Cubic yards per car	9.88

OPERATION REPORT.

Hours under steam	208.00
Hours worked	152.35
Days worked	24
Per cent of time under steam that shovel worked	73.4
Cubic yards per hour worked	391
	Cubic yards.
General daily average, place measurement	2,289

DIVISION OF EXPENSE—DELAYS.

	Hours and minutes.	Per Cent of delays.
Mining	4.30	8.0
Cleaning track	0.25	0.9
Repairs	14.30	25.7
Waiting for cars	17.40	30.8
Switching	0.10	0.3
Repairing track	1.35	2.8
Moving shovel	14.35	25.8
Cutting out (two times)	2.15	4.0
Derailments	0.45	1.7
Total	56.25	100.0

LABOR FORCE AND QUARTERS IN JANUARY.

On January 10, the combined Canal and railroad force was 38,505, the second largest since the beginning of the work, the largest being that of March, 1910, when there were 38,676 employes. The force at the close of work on January 31 numbered 37,438 of whom 30,114 were employed on the Canal, and 7,324 on the railroad. The gold force on the Canal, composed almost entirely of white Americans, numbered 4,364. As compared with the force at the close of December, 1911, the total force on January 31 was 388 less, and compared with January, 1911, it was 167 more. The force report for January 31 follows:

Department.	Silver Employes.* Artisans. Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	European Laborers. 20 cents.	16 cents.	West Indian Laborers. 20 cents.	16 cents.	13 cents.	10 cents.	7 cents.	Total Silver.	Total Gold.	Grand Total.
Const'ct'n and Eng'r'ng	4,314	12	15	244	679	2,938	3,983	818	120	573	4,919	2,678	258	21,551	3,228	24,779
Civil Administration	184	..	..	1	4	21	......	......	...	.....	......	16	....	229	382	611
Sanitation	672	..	..	3	3	2	......	......	1	3	10	307	5	1,006	365	1,371
Quartermaster's	895	..	1	116	197	184	84	6	31	.....	36	739	†11	2,301	209	2,510
Subsistence	648	..	..	2	.....	1	......	......	...	.....	......	......	....	651	55	706
Disbursements	7	..	..	....	.....	......	......	......	...	.....	......	......	....	7	27	34
Examinat'n of Accounts	5	..	..	....	.....	......	......	......	...	.....	......	......	....	5	98	103
Total	6,726	12	16	366	883	3,149	4,067	824	152	576	4,965	3,740	274	25,750	4,364	30,114
Month previous	6,774	11	16	362	859	3,095	4,122	719	150	575	4,620	3,836	272	25,411	4,420	29,831

Panama railroad force, 4,237; Panama railroad relocation force, 1,920; Panama railroad commissary force 1,167. Total, 7,324 I. C. C. force, 30,114. Graud total, 37,438.

*All wages specified are in gold.

†Includes 6 at 5 cents.

The force report of the Department of Construction and Engineering for January 31, follows:

Division.	Silver Employes.* Artisans. Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	European Laborers. 20 cents.	16 cents.	West Indian Laborers. 20 cents.	16 cents.	13 cents.	10 cents.	7 cents.	Total Silver.	Total Gold.	Grand Total.
Chief Engineer	101	..	1	38	29	89	75	123	15	26	531	110	5	1,143	196	1,339
Mechanical	223	5	2	2	30	439	66	1	...	.....	829	16	10	1,623	712	2,335
Atlantic	1,794	6	10	101	292	1,005	1,014	266	...	82	957	335	37	5,899	826	6,725
Central	1,123	1	..	30	127	470	1,985	156	90	465	985	1,968	151	7,551	791	8,342
Pacific	1,073	..	2	73	201	935	843	272	15	.....	1,617	249	55	5,335	703	6,038
Total	4,314	12	15	244	679	2,938	3,983	818	120	573	4,919	2,678	258	21,551	3,228	24,779
Month previous	4,338	11	15	241	662	2,861	4,013	714	114	574	4,571	2,665	251	21,030	3,284	24,314

*All wages specified are in gold.

QUARTERS.

On February 1, there were 25,298 occupants of Commission quarters. Of these, 9,388 were white Americans of whom 5,371 were men, 2,067 were women, and 1,950 were children. There were 6,374 Europeans of the laborer class, of whom 5,711 were men, 269 women, and 394 children. There were 9,536 West Indian negroes, of whom 7,168 were men, 1,051 women, and 1,317 children. Included in the above were 301 Asiatics, and 78 Panamans.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M'THS.	CULEBRA SECTION.*								CHAGRES SECTION.**				
	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.
Jan.....	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	1,416 035	169,447	389,399	175,802	255,385	28 357
Feb....	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	....	200,145	450,182	286,309	219,550	....
March .	132,840	239,178	815,270	1,290,885	1,434,597	1,509,728	1,728,748	....	324,233	619,491	484,846	297,339	....
April ..	126,749	213,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	....	329,483	510,020	428,777	102,103	....
May ...	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	....	235,902	386,170	248,974	29,783	....
June ...	76,905	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	....	322,145	275,900	164,389	32,288	....
July ...	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	....	345,757	233,897	166,106	22,284	....
August	49,210	244,823	786,866	1,171,927	1,173,370	1,377,714	1,442,402	....	368,683	231,543	234,404	21,892	....
Sept ...	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	1,340,173	....	346,948	235,818	234,290	21,272	....
Oct	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	1,306,971	....	424,911	221,409	271,409	12,216	....
Nov....	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	....	336,390	93,619	260,882	12,248	....
Dec....	70,630	307,689	1,025,485	1,210,046	1,152,022	1,211,400	1,351,082	....	383,948	105,044	197,481	10,809	....
Totals .	914,254	2,702,991	9 177,130	13,912,453	14,557,034	15,398,599	16,596,891	1,416,035	3,787,992	3,752,492	3,153,669	1,037,169	28,357

MONTHS.	ATLANTIC DIVISION.†					PACIFIC DIVISION.¶									
	GATUN LOCKS, DAM AND SPILLWAY.††					PEDRO MIGUEL LOCKS.‡					MIRAFLORES LOCKS, DAMS AND SPILLWAY.‡‡				
	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.
January...	292,155	102,690	125,011	65,889	1,330	....	83,726	27,320	15,69[illegible]	24,969	7,203	61,202	31,479	48,744	95,609
February..	282,797	95,031	123,738	50,511	....	....	58,242	9,486	6,809	....	39,046	53,689	15,300	12,936	....
March....	374,598	90,051	132,007	51,431	....	....	95,624	6,784	674	....	73,194	51,417	18,184	72,739	....
April.....	373,456	70,009	103,243	12,548	....	....	101,365	9,129	255	....	98,943	60,060	12,148	79,751	....
May......	266,747	52,786	82,958	17,677	....	....	57,523	10,405	5,905	....	73,023	47,588	20,250	57,975	....
June.....	244,951	36,556	88,088	4,840	....	13,228	70,971	8,420	7,454	....	68,691	55,653	21,994	38,023	....
July	213,359	39,058	95,503	6,897	....	22,648	77,503	4,410	6,273	....	104,369	50,999	11,990	97,884	....
August	188,262	40,346	99,737	22 558	....	22,217	58,025	12,789	220	....	94,248	35,446	17,548	102,249	....
Sept'mber	145,990	49,945	103,040	3,489	....	28,533	48,825	10,405	3,472	....	90,923	31,803	8,590	96,112	....
October...	154,064	57,321	118,327	112	....	48,875	39,002	7,433	5,365	....	74,700	25,349	9,850	107,790	....
November	118,278	63,452	94,552	....	....	55,401	20,207	10,636	12,962	....	52,930	18,644	9,400	84,894	....
December	119,904	96,590	72,030	....	....	65,578	28,342	11,195	17,320	....	69,650	20,083	17,906	79,480	....
Totals..	2,774,561	793,835	1,238,234	235,952	1,330	256,780	739,355	128,412	82,399	24,969	846,920	511,933	194,639	878,577	95,609

*Total to February 1, 1912, 74,918,859 cubic yards. Excavated in 1904, May to December, 243,472 cubic yards.

**Total to February 1, 1912, 11,952,448 cu. yds., of which 192,769 cu. yds were removed in 1907, 188,238 cu. yds. were removed by sluicing.

†Dry excavation at Mindi Hills began in July, 1907. There were excavated 172,851 cubic yards, 1907; 590,955 cubic yards 1908; 713,015 cubic yards, 1909; 662,995 cubic yards, 1911; total to date, 2,172,981 cubic yards.

¶There were also 76,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 699,545 cubic yards at different points in prism to Jan. 1, 1912. There were also 172 cubic yards removed by steamshovels outside of prism during October, 1908.

††Total to February 1, 1912, 6,410,719 cubic yards; in this total are included 26,628 cubic yards excavated October to December, 1906 and 1,340,179 cubic yards in 1907.

‡Total to February 1, 1912, 1 231,915 cubic yards. ‡‡Total to February 1, 1912, 2,527,678 cubic yards.

WET EXCAVATION.

MONTHS.	ATLANTIC DIVISION.†						PACIFIC DIVISION.††							
	ATLANTIC ENTRANCE.§						PACIFIC ENTRANCE.§§							
	1907.	1908.	1909.	1910.	1911.	1912.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
January...	111,100	490,701	521,050	510,055	520,181	520,228	....	95,940	94,710	460,250	469,529	518,936	379,810	412,118
February ..	110,002	427,722	444,910	493,448	455,318	....	....	95,940	93,480	663,519	671,477	285,791	386,866	....
March.....	84,145	546,886	461,208	412,325	391,736	....	....	116,820	92,319	783,281	865,696	462,588	639,761	....
April.......	69,889	496,366	470,635	190,574	492,579	....	....	110,700	104,855	676,539	731,767	534,322	439,622	....
May	133,847	564,386	315,370	447,578	514,178	....	....	112,340	122,157	530,466	720,753	484,509	548,047	....
June.......	124,118	572,749	182,575	458,021	452,098	....	50,676	62,697	133,575	656,621	844,685	475,486	576,100	....
July	109,922	625,497	348,451	423,092	425,195	....	41,533	98,400	108,338	696,170	733,181	515,782	520,692	....
August....	194,297	638,217	422,846	508,829	367,456	....	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....
September	403,842	624,776	410,574	451,873	420,434	....	114,308	105,780	153,975	750,080	662,976	473,585	534,667	....
October....	415,120	505,260	314,778	549,788	470,400	....	81,836	97,170	357,122	762,276	720,920	467,873	339,815	....
November.	422,797	570,832	457,889	600,708	742,242	....	71,176	92,988	365,423	609,089	627,791	425,870	462,283	....
December.	442,835	679,604	489,121	482,370	533,409	....	71,094	90,528	349,551	729,960	727,460	387,034	278,960	....
Totals.....	2,621,914	6,742,996	4,839,407	5,528,661	5,785,226	520,228	485,153	1,191,233	2,143,789	8,056,025	8,399,498	5,538,745	5,736,864	412,118

†Dredges removed 38,425 cubic yards at Gatun Dam site in 1907, and 488,533 cubic yards at Gatun Locks in 1908 and 1909.

††Excavated at Miraflores Locks 309 647 cubic yards in 1909; 156,125 cubic yards in 1910; 176,578 cubic yards in 1911.

§Total to Feb. 1, 1912, 27,465,897 cu. yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906.

§§Total to February 1, 1912, 31,963,425 cubic yards. Of this amount, 708,809 yards were removed by monitors.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.†			PEDRO MIGUEL LOCKS.††			MIRAFLORES LOCKS.‡		
	1910.	1911.	1912.	1910.	1911.	1912.	1910.	1911.	1912.
Jan	54,136	72,919	34,983	16,273	38,513	15,077	....	24,018	48,416
Feb................	55,696	72,103	......	13,218	37,011	....	146	20,896	......
March	60,998	86,884	......	18,793	44,716	....	314	31,173	......
April..............	63,227	67,361	......	24,522	28,635	....	13	38,758	......
May.	74,273	67,844	......	29,576	19,135	....	27	36,154	......
June	89,401	55,305	......	30,631	18,243	....	1,603	26,536	......
July	84,001	71,046	......	41,464	19,906	....	3 672	32,840	......
Aug...............	85,686	66,928	......	51,264	20,736	....	6,030	57,003	......
Sept...............	76,720	57,298	......	50,702	15,379	....	18,133	56,083	......
Oct................	86,949	53,636	......	61,422	25,637	....	22,159	60,873	......
Nov...............	75,152	43,907	......	64,248	19,622	....	23,871	41,726	......
Dec................	80,212	43,590	......	42,834	14,360	....	21,533	48,772	......
Total	886,451	758,821	34,983	444,947	301,893	15,077	97,501	474,832	48,416

Spillway, Gatun Dam, March 17, 1909—February 1, 1912, 177,055 cu. yds.
Miraflores Dam, to February 1, 1912, 321 cubic yards.
†116,072 cu. yds in 1909. ††33,856 cu. yds in 1909. ‡102 cu. yds in 1909.

FILL PLACED IN DAMS.

M'THS.	GATUN.*				PEDRO MIGUEL.†		MIRAFLORES.‡			
	1911.		1912.		1911.	1912.	1911.		1912.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan...	211,992	218,690	173,900	239,266	......	38,044	89,243	24,685	....	24,920
Feb..	301,733	211,008	....	....	......	......	87,335	32,404	....	....
Mar..	342,800	255,047	....	....	......	......	25,131	23,940	....	....
April	368,658	205,130	....	....	......	......	14,100	67,260	....	....
May..	419,348	207,751	....	....	......	......	18,353	30,032	....	....
June .	432,008	227,996	....	....	......	......	53,858	28,315	....	....
July..	324,947	201,996	....	....	14,865	......	24,957	54,415	....	....
Aug..	259,389	232,426	....	....	24,812	......	25,000	72,203	....	....
Sept..	261,838	194,497	....	....	4,052	......	6,409	34,480	....	....
Oct...	214,320	218,305	....	....	3,400	......	7,130	37,250	....	....
Nov..	266,603	207,157	....	....	3,190	......	14,370	31,800	....	....
Dec..	89,752	233,063	....	....	7,350	......	....	23,730	....	....
T'tal	3,493,388	2,613,066	173,900	239,266	57,669	38,044	366,336	460,514	....	24,920

*Wet fill to Jan. 1, 1911, 5,833,076 c. y.; Dry fill to Jan. 1, 1911, 6,128,105 c. y.
†Dry fill to Jan. 1, 1911, 260,852 c. y.
‡Wet fill to Jan. 1, 1911, 294,712 c. y. Dry fill to Jan. 1, 1911, 609,863 c. y;

CANAL EXCAVATION TO DATE.

By French Companies.........................		78,146,960
French excavation useful to present Canal.........................		29,908,000
By Americans—		
Dry excavation.........................	99,804,311	
Dredges.........................	60,786,869	
Total.........................		160,591,180
May 4 to December 31, 1904.........................	243,472	
January 1 to December 31, 1905.........................	1,799,227	
January 1 to December 31, 1906.........................	4,948,497	
January 1 to December 31, 1907.........................	15,765,290	
January 1 to December 31, 1908.........................	37,116,735	
January 1 to December 31, 1909.........................	35,096,166	
January 1 to December 31, 1910.........................	31,437,677	
January 1 to December 31, 1911.........................	31,603,899	
January 1 to January 31, 1912.........................	2,580,217	

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation.........................	8,583,700	36,576,555	*83,553	10,651,267
Dredges.........................	27,992,855		10,734,820	
Central—				
Culebra Cut.........................	74,918,859	86,871,307	14,525,146	14,929,989
All other points.........................	11,952,448		404,843	
Pacific—				
Dry excavation.........................	4,537,543	37,143,318	2,394,537	9,150,943
Dredges.........................	32,605,775		6,756,406	
Grand totals.........................		160,591,180		34,732,199

*Estimate exceeded by this amount.

COVER PLATES IN LOCKS.

Castings for Apertures Over Machinery Recesses.

The installation of lock machinery and electrical equipment involves the manufacture of 1,163 covers, varying in size from a circle of two-foot diameter, covering the smaller cable manholes, to a rectangle of nine by twenty-one feet covering the miter gate machinery recess. The openings to be covered are located in the roof of the machinery recesses, cable shafts, and operating tunnels of the lock walls in order that access may readily be gained to the machine parts. It is contemplated that the permanent equipment of the locks will include locomotive cranes, which will travel upon the towing tracks on top of the walls. In case of serious accident to the machinery, a crane will be sent down the lock wall to the seat of trouble the recess cover will be taken off, and the machine exposed for repairs.

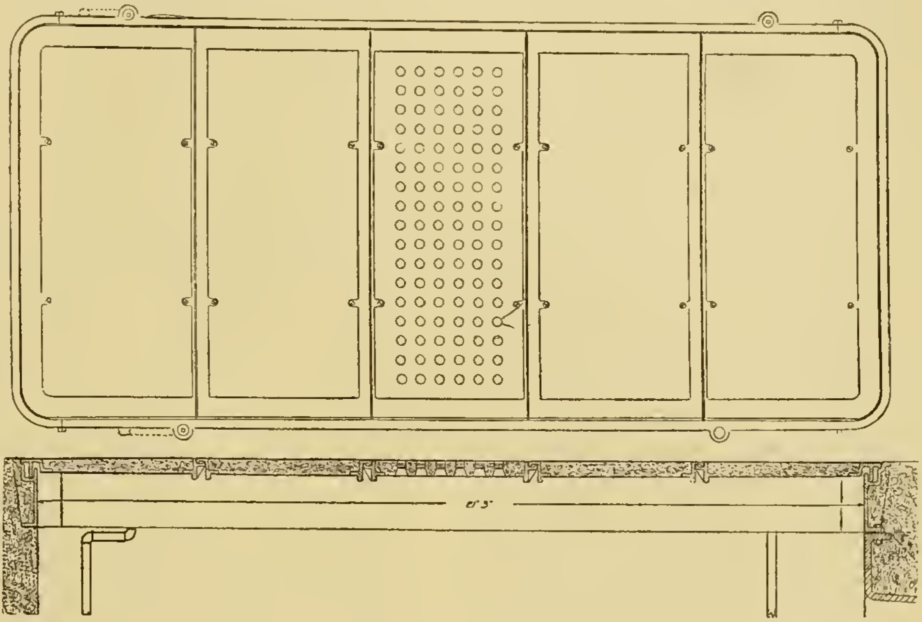
Covers are to be installed over the rising-stem valve machines, cylindrical valve machines, miter gate moving machines, chain fender machines, guard valve machines, auxiliary valve machines, float well chambers, transformer rooms, cable shafts, cable manholes, and certain special rooms and recesses. In addition, cover plates are to be installed over the conductor slots of the electric locomotive tracks—two to four bands of steel, each fourteen inches wide, stretching continuously the entire length of each of the lock walls.

The total weight of the cast iron which enters the construction of the machinery room covers amounts to 824 tons, and the weight of the conductor slot cover plates amounts to 1,023 tons. The cast iron covers and seats are to be manufactured at the Gorgona shops, while the rolled steel cover plates have been contracted for in the States with other track material.

The different machinery rooms and recesses require various designs and arrangements of covers. Some rooms require a single cover; others require two covers. Some covers are designed with a small cover seated within a larger one. A few covers are of highly special design to adapt the castings to other constructive features of the lock walls, such as vertical curves and other surface disfigurations In several cases the conductor slot must be cast integral with the covers, which involves quite complicated castings.

The cover over the cylindrical machines is illustrative of the general design of small covers. It is very desirable that daylight be utilized as far as practicable to illuminate the machinery recesses and operating tunnel, and in order to obtain daylight, the majority of the covers include a number of glass prisms such as are used in vault light construction. In the cover for the cylindrical valve, eighteen glass prisms are set in neat cement on a perforated cast iron frame. The cover rests in a cast iron seat which is solidly imbedded in the concrete decking over the recess. In the center of the cover there is provided a cored hole which serves a double purpose; first of inserting a bolt to clamp through an underhanging yoke in order to tighten the cover down upon a gasket seat and prevent leakage of water over the machinery below, and, second, of inserting a lifting bolt to hook upon a crane hook. If necessary, the joint between cover and seat can be calked.

Typical of a large cover is the design used over the miter gate moving machines. Here access must be available to the large crank gear which drives the strut of the massive miter gates, and an immense cover is necessary on this account. As shown in the illustration herewith this cover is sectionalized in five parts, all resting upon a common seat which is either imbedded in solid masonry or supported from steel framing. Each of the five covers consists of a cast iron rim which contains a heavily reinforced concrete slab designed to support five hundred pounds per square foot. The middle slab contains a large number of deck lights for natural illumination below. Each of the covers is cast with four bolt holes for inserting ring bolts by means of which the piece can be lifted with a crane. As is the case with the cover over the cylindrical valve recess, the cover over the crank gear should not leak under tropical downpours, and in order to insure freedom from dripping the covers and seats are drained. The draining is accomplished by making the joints between covers male and female, the female portion draining the water toward each end where the covers overlap a gutter which is cast into the cover seat. The gutter in the cover seat slopes to a drain pipe which connects to a sump in the floor of the machinery room.



PLAN AND SECTION OF COVER FOR RECESS FOR MITER GATE MOVING MACHINERY.

For cable manholes outside the operating tunnel, a solid cast iron cover, two feet in diameter, with a light T-section rim, is designed. It is not necessary that this cover be water-tight. The cable manholes and handholes through the operating tunnel are to be covered with plain reinforced concrete slabs. Specially difficult designs are encountered in the covers over the guard valve recesses, which are located directly under a vertical curve. These covers in addition embody a conductor slot and track support cast solid with the piece.

In order to obtain natural daylight in the operating tunnels, there has been developed a deck-light slab, which covers an opening 15 inches by 18 inches. The openings are spaced on fifteen-foot centers throughout the entire length of tunnel, and alternate in spacing with the electric lamps used to illuminate artificially the tunnel, the lamps also being spaced upon fifteen-foot centers. In this form of deck-light, twelve glass prisms are embedded in a reinforced concrete slab, which in turn is cemented into the rabbets of the 12 by 18-inch opening through the decking over the operating tunnel.

The manufacturing of covers is to be done in as regular manner as possible and will continue until March, 1913. This month's output will be in the neighborhood of 34,000 pounds, whereas the estimated product of succeeding months will vary from 75,000 pounds to 150,000 pounds.

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to December 31, 1911, follows:

PERIODS.	Department of Civil Administration	Department of Law	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total
To June 30, 1909	3,427,090.29	....	9,673,539.28	69,622,561.42	78,022,606.10	....	160,745,797.09
Fiscal year, 1910	709,351.37	....	1,803,040.95	26,300,167.05	2,863,088.83	....	31,675,648.20
Fiscal year, 1911	755,079.44	....	1,717,792.62	27,463,401.31	3,112,334.60	....	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,089,361.82	312,920.11	....	2,615,340.33
August, 1911	74,768.45	1,878.27	156,954.79	2,287,506.30	355,087.42	86,243.14	2,962,438.37
September, 1911	64,905.24	1,805.83	146,912.23	2,212,702.66	234,233.58	86,275.56	2,746,835.10
October, 1911	64,143.49	1,586.71	152,252.71	2,751,377.24	323,154.80	32,061.45	3,324,576.40
November, 1911	66,491.92	2,502.39	138,404.22	2,346,719.44	200,614.00	93,952.56	2,848,684.53
December, 1911	66,013.49	1,854.62	143,745.59	2,467,291.16	316,891.32	60,794.07	3,056,590.25
Total	5,300,738.91	12,155.17	14,070,278.22	137,541,088.40	85,740,930.76	359,326.78	243,024,518.24

SOCIAL LIFE OF THE ZONE.

Literary Activities of Women's Clubs.

The home department of the Cristobal Woman's Club held a Dickens afternoon on Wednesday, February 14. The program consisted of a paper on the novelist, and readings from his works.

The Empire club will meet at the home of Mrs. Hudson, Empire, on Thursday, February 15. The regular study on India will be continued.

The subject for the meeting of the Paraiso Woman's Club on Wednesday, February 21, is "American Artists and Their Work." Members are requested to invite their friends. The program meetings of the club will be open.

The Ancon Study Club had for its program on Thursday, February 8, the French occcupation of Panama, a paper being read by Mrs. Shick. A paper on a visit to Fort San Lorenzo was read by Mrs. Hunter, and the members responded to roll call with short items dealing with some phase of Panama life or history. The meeting on Thursday, February 15, will be held at the home of Mrs. M. White. The subject is the American occupation. This will be divided under three heads; sanitation, quartering the force, and subsistence.

Civil Service Examinations.

A supply of the Manual of Examinations for the spring of 1912 has been received in this office.

The following examinations will be held beginning probably about the third Sunday in March and applications therefor will be received until February 28: assistant, Philippine Service; assistant inspector, and local inspector, of boilers; assistant inspector, and local inspector, of hulls; bookkeeper, Philippine Service; civil engineer, Philippine Service; civil engineer student, Departmental Service; copyist topographic draftsman, topographic draftsman, Departmental Service; junior engineer draftsman, Engineer Department at Large; forest assistant, Forest Service; forest assistant, Philippine Service; industrial teacher, Philippine Service; junior engineer (mechanical), junior engineer (mining), Bureau of Mines; kindergarten teacher, Indian Service; matron, Indian Service; physician, Indian, Isthmian Canal, Philippine, and Public Health and Marine-Hospital Services, and Coast and Geodetic Survey; postal clerk, Isthmian Canal Service; teacher, Philippine Service; veterinarian, Philippine Service; and veterinary inspector, Departmental Service. Women will be admitted to the copyist topographic and topographic draftsman examinations, and may be admitted to the teacher, Philippine Service, examination; women only will be admitted to the kindergarten teacher and matron, Indian Service, examinations.

In requesting application blanks for any of the above-named examinations the exact title thereof as given above should be stated. In filing applications the date of examination should be *omitted.* In answering questions in regard to bona fide residence, such residence must be shown in a State or Territory of the United States, and county thereof, *up to the time of filing application.*

It is to be noted that the examination for clerk, Isthmian Canal Service, will *not* be given during the spring of 1912. No inquiry in regard thereto should therefore be made before August 1, 1912. JOHN K. BAXTER,
Secretary, Isthmian Civil Service Board.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

PENTATHLON ATHLETIC MEET.

On Thursday, February 22, the Y. M. C. A.'s will hold a Pentathlon Athletic Meet at the Empire Baseball Park. This style of meet differs from the regular kind in that there are only five events and each contestant competes in all of the events, receiving a final score based on the exact record he made in each event. A possible hundred points can be made in each of the five events: 100-yard dash, 12-pound shotput, running high jump, pole-vault, and half-mile run. A contestant whose total points are between 200 and 299 inclusive wins a bronze medal, 300 to 399, a silver medal and 400 or over, a gold medal. Special events are a four-man relay race, running broad jump for boys, and 75-yard dash for boys. The entries closed Saturday, February 10, with a total of 56 distributed as follows: Cristobal 5, Gatun, 7, Gorgona 11, Camp Elliott 11, Camp Otis 6, Empire 6, Culebra 5, Corozal 5. There will be music by the Isthmian Canal Commission Band.

MOVING PICTURES.

The moving picture schedule for the week of February 19 to 24 is as follows: Monday, Empire; Tuesday, Corozal; Wednesday, Culebra; Thursday, Gatun; Friday, Cristobal; Saturday, Gorgona.

COROZAL.

About 125 people attended the meeting of the Debating Society last Monday night. The program consisted of a debate, a song by Mr. Stapleton, several songs by the Paraiso Quartette and three selections by the Corozal instrumental quartette. President Bennick presided at the meeting.

Carpenters are now working on the addition to the clubhouse. In addition to the bowling alleys there will be shower baths, a locker room, a barber shop, committee rooms and a veranda on the side of the present hall.

Regular practice is being held to develop an indoor baseball team. Mr. Lofgren has been elected captain.

CULEBRA.

The following is the standing in the chess tournament.

Name.	Won.	Lost.	Draw.
Bartlett	6	5	
Dubois	7	4	1
Goodenow	6	6	
Erickson	4	9	
Janney	7	6	1
Newman	3	9	1
Sterns	6	2	1
Vogel	1	1	
Warner	4	2	

The following are the high scores in duckpins: Cornthwaite, 115; Dunfey, 103; Case, 102; Bartlett, 101; Van Zandt, 110; Fay, 104; Mengel, 100.

On Friday evening the Empire men played pool and billiards with the following result: *Billiards*—DuBois (Culebra), 73, Smith (Empire), 100. Tragsdorf (Culebra), 100, Wood (Empire), 42. *Pool*—Flynn (Culebra), 100, Davis (Empire), 60. Hillery (Culebra), 107, McCullough (Empire). 125. Steavens (Culebra), 87, McKeever (Empire), 100.

EMPIRE.

The following high scores were bowled on the alleys during the past week: Candle pins—Nelson, 100, 102; Pinney, 112, 101; Grund, 111; Rodeighiro, 105, 102, 107; H. King, 106; Dakin, 105, 102; Parkis, 104; Goolsby, 104; Gustaveson, 103, 101. Duck pins—Rodeighiro, 104, 106, 117, 106, 107, 116; Dakin, 112, 101; Gorham 110, 100.

Twenty-two men have entered the February pool tournament.

On Sunday night, February 11, the Sunday evening song service was led by Mr. Booz of Gorgona. Mrs. McLeod played two selections on the violin, accompanied by Mrs. King, after which Mr. Safford of Camp Elliott gave a talk on "Progress." There was an attendance of one hundred and fifty.

On Saturday night, February 17, the Eberly Concert Company will be at Empire. Reserved seats on sale on Thursday, February 15.

GORGONA.

The next Sunday night song service will be held on February 18 at 7 o'clock. There were 93 present on Sunday night, the 11th. Special music was furnished by Messrs. Kuentz, M. Booz, and Hopkins.

There were 24 entries at the Checker Club "smoker" on Saturday night, February 10. Refreshments were served. Messrs. Miller and Taylor tied for first place, the latter finally winning the contest.

There were 279 present at the moving picture show, February 12. Mrs. Shady and Mr. Reinhold furnished special music.

GATUN.

W. C. Gayer, member of the executive council, led the discussion club on Sunday evening, February 11. The subject was "Christian Politics." Among those who spoke were: Frederickson, Dillon, Smith, Kitts, Klowan, St. Clair, and Langley. The subject for next Sunday night will be the "The Emancipation of the Voter."

Wm. N. Swain, of Boston, Mass., gave an address on "The Value of the Cooperative Bank" on Monday evening, February 12.

An order for a large number of books will be mailed this week. Among them are full sets of Mark Twain and Shakespeare.

The program for the smoker on Saturday night, February 17, will include: Tenth Infantry Orchestra; Mr. Bronson, pianist and accompanist; Emery and Cogan, black face artists; Stapleton, contortionist; Tudor, balancer and juggler; Huber and Nabsted, wrestlers; Tropical Quartet, Dickson, Ross, Kersey and Case; Vierbuken, rag-time soloist.

The first interassociation indoor athletic meet held on the Zone was conducted in the Gatun clubhouse on Saturday evening, February 10. Six clubhouses and Camp Elliott were represented with 53 entries. For the pole vault DeCora (Cristobal) and Barcroft (Culebra) vaulted for over 45 minutes when the event was announced as a tie for first place. The jumping of Chadbourne of Corozal and Koperski of Empire was a feature. Chadbourne's jump of 5 feet 6¼ inches establishes a new record for the Isthmus. This meet has stimulated interest in the athletic meet to be held at Empire on February 22. The officials were: Referee, Fred Huber of Gatun; Clerk of Course, W. E. Burrell, Cristobal; Starter, J. T. Hopkins, Gorgona; Announcer, Charles Ourand, Gatun; Inspectors, Smith of Gatun, Warr of Empire; Marshal, Bill Settlemire of Gatun; Timekeepers, Foman of Gatun, Geer of Corozal, Doran of Empire; Judges, Safford of Camp Elliott, LaMont of Gatun, and Garrett of Empire; Chairman of Committee of Arrangements, R. L. Dwelle of Gatun. The points were won as follows: Empire 23, Culebra 20, Cristobal 11, Gorgona 10, Camp Elliott 9, Corozal 5, Gatun 3. The various events and respective winners are as follows:

Twenty-Yard Dash—First, Mathues, Cristobal; second, Marshall, Camp Elliott; third, Luttrell, Empire.

Twelve Pound Shot Put—First, McDonald, Empire; second, Anderson, Camp Elliott; third, Luttrell, Empire.

Potato Race—First, Ellsworth, Culebra; second, Barlett, Gatun; third, Whittles, Cristobal.

Running High Jump—First, Chadbourne, Corozal; second, Koperski, Empire; third, Knapp, Camp Elliott.

Pole Vault—First, Barcroft, Culebra, tied with DeCora, Cristobal; second, Simms, Gorgona.

Human Wheelbarrow Race—First, Luttrell and Koperski, Empire; second, Cornthwaite and Ellsworth, Culebra; third, Anderson and Gabriel, Camp Elliott.

Standing Broad Jump—First, Cornthwaite, Culebra; second, Luttrell, Empire; third, Robinson, Gorgona.

Obstacle Race—First, Buis, Gorgona; second, Ellsworth, Culebra; third, Whittles, Cristobal.

Eight-Man Relay Race—First, Empire team; second, Gorgona team; third, Camp Elliott team.

Mrs. Blanche Caldwell of Cristobal sang several solos at the moving picture entertainment on Tuesday, February 6. Mr. Bronson acted as accompanist.

A three-cushioned billiard tournament was started on Monday, February 12.

CRISTOBAL.

A complete root beer fountain has been installed.

On Friday evening, February 16, the Eberley Concert Company, which is due to arrive from the States the preceding day, will give a select programme. Admission, members free, non-members, 50 cents.

On Thursday evening, February 22, the Tenth Regiment Band will give a Washington's Birthday concert. The programme will be rendered out of doors, using the Isthmian Canal Commission bandstand.

High scores for the week, February 10: Duck pins—Barte, 125, 110, 108, 110, 106, 105, 105, 102; DePootrer 126; Herring, 125, 121; Green, 107; Jacques, 111, 101; Barrett, 105, 105; Smith, 104; Herrington, 102; Hess, 101; Weston, 110, 110, 105; Gibson, 106, 104; DeLong 117, 107, 102. Ten pins—Beattie, 223; W. Burns, 204. Candle pins—Weston, 124.

The score of a duck pin match between Gatun and Cristobal follows:

Gatun.				Cristobal.			
DePoorter	82	99	126	Barrett	85	93	90
DeMoll	81	81	91	Gibson	92	92	86
Green	92	89	107	Herrington	86	98	80
Wurster	84	95	81	Smith	95	88	96
Barte	91	91	93	Herring	84	95	121
Total	430	455	498		442	466	473

Band Concert.

A band concert will be given by the Isthmian Canal Commission Band at Bas Obispo, C. Z., on Sunday, February 18, 1912, at 6.00 p.m.

The next concert will be given at Culebra, on February 25, at 5.45 p. m.

OFFICIAL CIRCULARS.

Saturday Night Train Service.

CULEBRA, C. Z., February 6, 1912.

CIRCULAR No. 286-B:

On the new schedule, which will be put into effect when the relocated line is opened February 15, two Saturday night trains each way will be operated. These Saturday night trains are put on for the convenience expecially of employes who wish to attend entertainments of various kinds along the line, and hereafter no special trains of Commission equipment will be authorized to be operated on the Panama railroad main line.

If employes find it necessary to have train service on other that Saturday nights, they will be allowed the employes' rate for special trains upon application to this office. These will be made up of Panama railroad equipment and operated by Panama railroad crews, the train to consist of an engine, baggage car and one coach, with extra charge for extra coaches. Rates will be quoted by any Panama railroad agent upon application.

H. F. HODGES, *Acting Chairman.*

Amendment of Civil Service Rules.

CULEBRA, C. Z., February 8, 1912.

CIRCULAR No. 432:

The President issued an Executive Order under date of December 9, 1911, amending the civil service rules, from which the following two paragraphs are quoted:

2. A person whose removal is proposed shall be furnished with a statement of reasons and be allowed a reasonable time for personally answering such reasons in writing; but no examination of witnesses nor any trial or hearing shall be required except in the discretion of the officer making the removal. Copy of such reasons and answer, and of the order of removal shall be made a part of the records of the proper department of office, and the Commission (U. S. Civil Service Commission) shall upon its request be furnished with a copy of the record in the case. The above procedure shall be followed in like manner in any reduction in grade or compensation.

2. Pending action under Section 2 of this rule a person may be suspended or temporarily dismissed without notice for a period not to exceed thirty days, but the reasons for such suspension or dismissal shall be filed in the records of the proper department or office.

The foregoing order is applicable to classified positions under the Isthmian Canal Commission. These positions are those of Clerk, Bookkeeper, Stenographer, Typewriter, Surgeon, Physician, Trained Nurse and Draftsman.

H. F. HODGES,
Acting Chairman.

Shop Expense Percentage.

CULEBRA, C. Z., February 3, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

In accordance with the provisions of Circular No. 169-E the following shop expense percentage for each shop is hereby fixed effective February 1, 1912, and will be applied, until further orders, to the distributed labor used in all shop work in accordance with the provisions of Circular No. 264-A, viz:

Division or shop.	Shop expense percentum.
Mechanical Division	35
Empire shop	20
Dry Dock shop	50
Balboa shop	25
Porto Bello shop	30
Toro Point shop	40
Panama Railroad shop	30

Previous circular letters from this office, fixing shop expense percentage, are revoked.

H. F. HODGES,
Acting Chairman, Isthmian Canal Commission.
Second Vice-president, Panama Railroad Company.

Classified Expenditure Accounts.

EMPIRE, C. Z., February 5, 1912.

CIRCULAR No. 36:

The following new accounts and amendments have been authorized in the Classified Expenditures, Isthmian Canal Commission:

NEW ACCOUNTS.

Atlantic Division—

Account 318. Terminal Facilities—Cristobal.

(a) Construction.

To this account will be charged all expenditures for labor and material used in the construction and maintenance of the permanent terminal facilities at Cristobal.

(b) Plant.

This account will be opened with a charge for the value of plant heretofore purchased for or used in the construction of the permanent terminal facilities at Cristobal and for plant hereafter purchased for or used therein; also to be charged with plant transferred from other divisions or units of the work and credited with plant transferred from this work.

Pacific Division—

Account 342. Terminal Facilities—Balboa.

(a) Construction.

To this account will be charged all expenditures for labor and material used in the construction and maintenance of the permanent terminal facilities at Balboa.

(b) Plant.

This account will be opened with a charge for the value of plant heretofore purchased for or used in the construction of the permanent terminal facilities at Balboa and for plant hereafter purchased for or used therein; also to be charged with plant transferred from other divisions or units of the work and credited with plant transferred from this work.

AMENDMENTS.

General Items—

Account 402. Cristobal Terminals.

(a) Docks and Wharves—Amended as follows: To this account will be charged all expenditures for labor and material used in the construction and repair of wooden docks and wharves at Cristobal including the tracks laid thereon, together with all machinery, tools, supplies, etc., that may be used in construction and renewals of same.

Account 403. Balboa Terminals.

(a) Docks and Wharves—Amended as follows: To this account will be charged all expenditures for labor and material used in the construction and repair of wooden docks and wharves at Balboa including the tracks laid thereon, together with all machinery, tools, supplies, etc., that may be used in construction and renewals of same.

H. A. A. SMITH,
Approved: *Examiner of Accounts.*
H. F. HODGES,
Acting Chairman and Chief Engineer.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the two weeks ending February 10:

Colon, January 28, from New York, with 33 pieces pipe fittings, 9 barrels wheels and chains, 44 packages castings, for Pacific Division; 12 bundles car springs, 100 pieces castings, for Mechanical Division; 40 barrels screw spikes, 10,600 pieces splice bars, for Panama Railroad Company; 7 cases air brake material, 10 cases steel lockers, 80 cases paint, 9 cases steamshovel parts, 34 rolls grass rugs, 100 cases lye, 60 bundles roofing iron, 68 barrels sea coal facing, 35 coils manila cable, 100 bundles car springs, 20 cases chloride of lime, 37 barrels rosin, 30 barrels pitch, 546 bales hay, 146 pieces lumber, 11 kegs bolts, for stock; and a miscellaneous cargo, the whole consisting of 12,139 packages, weighing 446 tons.

Trent, January 28, from New York, with 130 coils steel rope, 229 pieces pipe, for stock.

Prinz Sigismund, January 30, from New York, with 89 bales waste, for stock.

Median, January 30, from Liverpool, with 329 barrels carbolic acid, for stock.

Nordpol, January 30, from New York, with 97 cases blasting caps, 188 drums gasoline, for stock; 120,698 bags cement, for Atlantic and Pacific Divisions.

Santa Marta, February 1, from New York, with 30 cases hardware, for stock.

Heredia, February 2, from New York, with 47 pieces castings, 52 bundles castings, for Atlantic Division; 27 pieces pipe, for Pacific Division; 1,423 pieces car lumber for Mechanical Division; 25 cases paint, 8 pieces frogs, 29 rolls cotton duck, 800 cases cup grease, 16 barrels non-liquid oil, 240 drums locomotive engine oil, 240 drums stationary engine oil, 480 cases black grease, 380 drums kerosene, 213 pieces castings, 3,205 pieces yellow pine lumber, 45 pieces piling, for stock.

Turrialba, February 3, from New York, with 21 cases tape fuse, 7 cases harness oil, for stock; 54 crates bolts, 18 cases bolts, for Atlantic Division.

Otta, February 3, from Baltimore, with 8,000 cases dynamite, 1,460 kegs nails, 2,167 pieces sewer pipe, 40 cases putty, 5 barrels paint, 160 kegs washers, 25 crates reed rockers, 300 kegs spikes, 600 kegs bolts, 8,000 bundles tie plates, for stock; 400 pieces castings, (lock material), 24 bundles castings, (lock material), 60 cases castings (lock material), 15 pieces cast iron pipe, 360 pieces sewer pipe, 102,804 pieces vitrified tile, 61 bundles rails and channels, 158 bundles rack castings, 16 cases bolts and washers, for Atlantic Division; 248 pieces castings (lock material), 38 cases castings (lock material), 26 bundles castings, (lock material), 314 pieces steel beams, 9 pieces pipe, 35,680 pieces vitrified tile, 64 bundles rack castings, 113 pieces steel ties, 183 bundles rails and channels, 13 cases bolts and washers, 8 kegs bolts and washers,for Pacific Division; 219 pieces car couplers, 69 pieces knuckles, 354 pieces white oak lumber, 30 packages 2-locomotive cranes, for Mechanical Division; 862 pieces steel plates, 601 kegs rivets, for Panama Railroad Company.

Advance, February 3, from New York, with 61 packages spillway castings, for Atlantic Division; 115 kegs bolts, 67 cases bolts, for Pacific Division; 34 pieces steel plates, 500 pieces steel knuckles, 12 barrels castings, 500 pieces car couplers, for Mechanical Division; 17 cases bolts and nuts, 500 bundles shovels, 10 cases electrical material, 32 barrels rosin, 26 cases rubber hose, 10 cases lubricating oil, 100 drums thermit, 200 kegs oxide of zinc, 16 cases air brake material, 55 pigs lead, 1,495 pieces pipe, 223 bundles pipe, 31 bundles steel plates, 150 drums paint, 82 barrels paint, 60 cases picks, 75 cases caustic soda, 12 cases valves, 120 cases signal oil, 36 pieces lumber, for stock; and a miscellaneous cargo, the whole consisting of 4,784 packages, weighing 360 tons.

Prinz August Wilhelm, February 5, from New York, with 91 bales cotton waste, 9 cases hardware, for stock.

Mackinaw, February 5, from San Francisco, with 1,351 pieces lumber, for stock.

Atenas, February 8, from New Orleans, with 66 pieces piling, 674 pieces lumber, for stock; 881 pieces lumber, 51 barrels brake shoes, for Mechanical Division; 25 pieces castings, 26 bundles castings, 20 crates concrete mixers, for Atlantic Division; 162 pieces water pipe, for Pacific Division; 75 sacks dairy feed, 100 cases paint, for stock.

Navajo, February 8, from San Francisco, with 750 cases dynamite, 1,332 bales hay, for stock.

Statesman, February 8, from Liverpool, with 6 pieces dredge buckets, for Pacific Division.

Metapan, February 8, from New York, with 15 cases wire, 14 cases files and punches, 13 cases hardware, for stock.

Riverside, February 8, from Columbia River, Oregon, with 52,407 pieces lumber, for stock.

Panama, February 9, from New York, with 33 pieces snubbing posts, 170 bundles wire mesh, 8 cases pumps, for Atlantic Division; 206 bundles mesh reinforcement, 25 cases leadite, for Pacific Division; 70 kegs potash, 37 bundles springs, for Mechanical Division; 34 pieces derails, for Panama Railroad Company; 9 cases steel book cases, 13 cases dry goods, 22 cases drugs and sundries for Sanitary Department; 31 cases desks, for Department of Civil Administration; 10 cases harness, 20 cases chalk, 150 cases oil, 67 pieces frogs and switches, 34 bundles rubber hose, 264 bundles roofing iron, 10 bundles steel bars, 14 rolls cotton duck, 95 coils rope, 43 crates handles, 8 bales packing, 100 crates refrigerators, 11 cases emery cloth, 100 cases caustic soda, 36 cases air brake material, 50 bundles claw bars, 75 cases soap, 250 rolls roofing paper, 14 bundles mop heads, 200 drums thermit, 262 drums oil, 250 kegs bolts, 94 kegs washers, 16 packages castings, for stock; and a miscellaneous cargo, the whole consisting of 2,952 packages, weighing 365 tons.

Tivives, February 10, from New York, with 54 cases washers, 5 cases stationery, for stock.

Married.

HAMMOND-MACSPARRON—On February 8, in the DeLesseps Building, Cristobal, Miss Gladys MacSparron of Philadelphia, Pa., to Arthur Henry Hammond of Glens Falls, N. Y., the Rev. Carl H. Elliott officiating. Isthmian residence, Colon.

Family Quarters.

Applications for married quarters were on file on February 1, as follows:

DISTRICT.	List No. 1.	List No. 2.
Ancon	8 (2)	63 (17)
Ancon Hospital	1	8 (2)
Balboa	2	31 (7)
Bas Obispo	....	32 (2)
Corozal	....	54 (11)
Cristobal	3 (1)	131 (1)
Culebra	6 (1)	44
Empire	1	78 (25)
Gatun	3	119 (37)
Gorgona	1	75 (25)
Las Cascadas	1	24
Pedro Miguel	2	44 (14)
Porto Bello	....	12 (10)
Toro Point	....	6 (3)
Totals	28 (4)	721 (154)

NOTE—The figures in parenthesis show the number of applicants already occupying regular or non-housekeeping family quarters at stations other than those at which applications are filed.

Auction Sale of Calves and Dairy Cows.

On Saturday, February 17, at 10.00 a. m., there will be sold at public sale at the Ancon Hospital Dairy, two dairy cows between 7 and 10 years of age, and ten or more calves between 1 and 2 months old. Terms of sale, cash.

The dairy is located near the insane asylum buildings in the rear of the hospital grounds.

CHAS. F MASON, *Superintendent.*

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning February 14, 1912.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed), 10 pounds and over, per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin, for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	16
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24
MISCELLANEOUS.	
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Beef, per pound	25
Eggs, fresh, dozen	42
one-half dozen only	22
Halibut, fresh, per lb	12
Salmon, fresh, per lb.	14
Fluke, fresh, per lb.	10
Oysters, 1 qt. kegs, per keg	50
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each 60, 70, 80, 90	1.00
Ducks, Western, about 4½ pounds, each	†1.25
Hens, milk fed, for roasting, about 3 pounds, each	50
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	25
Squabs, each	35
Capons, each	2.10
Grouse, each	50
Ducks, teal, per pair	60
CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
Sliced bacon in 1-pound tins, per tin	30
In 1-pound jars, per jar	30
DAIRY PRODUCTS.	
Butter—Creamery special, per pound	45
Cheese—Roquefort, per pound	45
Philadelphia cream, cake	10
Young America, per pound	20
Swiss, per pound	26
Edam, each	1.00
Parmesan, lb	§35
Neufchatel, cake	6
Gouda, per pound	34

	Price.
Milk (Certified), per bottle	**20
Fer-mil-lac, bottle	**20
Ice cream, quart	‡25
½-gallon	‡50
VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	10
Cabbage, per pound	4
Cucumbers, per pound	15
Carrots, per pound	4
Lettuce, per pound	*8
Onions, per pound	†5
Potatoes, white, per pound	3½
sweet, per pound	2
Parsnips, per pound	4
Turnips, per pound	3
Yams, per pound	3
Apples, per pound	5
Grapes, per pound	15
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery

§Sold only from cold storage and not from commissaries.

Rainfall from February 1 to 10, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	.02	7	.02
Balboa	.03	7	.04
*Miraflores	.02	10	.04
Pedro Miguel	.03	7	.03
Rio Grande	.14	7	.17
Central Section—			
Culebra	.09	7	.11
*Camacho	.05	7	.13
Empire	.02	7	.03
Gamboa	.07	8	.14
*Juan Mina	.21	7	.28
Alhajuela	.14	7	.15
*El Vigia	.24	7	.31
*Gorgona	.09	7	.11
*Monte Lirio	.57	9	1.62
Atlantic Section—			
Gatun	.41	8	1.36
*Brazos Brook	.44	8	1.53
Colon	.51	7	1.25
Porto Bello	.57	9	†1.35

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5 p. m., February 9.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, February 10, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Feb. 4	125.2	91.6	44.2	13.3	13.3
Mon., Feb. 5	125.2	91.6	44.2	13.2	13.2
Tues., Feb. 6	125.2	91.5	44.2	31.2	13.2
Wed., Feb. 7	125.2	91.6	44.2	13.2	13.2
Thurs., Feb. 8	126.2	92.4	44.4	13.2	13.2
Fri., Feb. 9	126.2	92.6	45.4	13.4	13.4
Sat., Feb. 10	125.5	91.9	44 6	13.6	13.6
Height of low water to the nearest foot	125.0	92.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending February 21, 1912 (75th meridian time):

DATE.	High	Low	High	Low
	A.M.	A.M.	P.M.	P.M.
February 15	2.01	8.15	2.45	8.44
February 16	2.48	8.59	3.20	9.24
February 17	3.26	9.37	3.52	9.59
February 18	4.01	10.12	4.21	10.32
February 19	4.32	10.46	4.52	11.06
February 20	5.05	11.20	5.22	11.40
February 21	5.37	11.54	5.55	......

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Allianca	P. R. R.	Friday	Feb.	9
Colon	P. R. R.	Friday	Feb.	16
Advance	P. R. R.	Friday	Feb.	23
Panama	P. R. R.	Thursday	Feb.	29
Allianca	P. R. R.	Wednesday	Mar.	6
Colon	P. R. R.	Wednesday	Mar.	13
Advance	P. R. R.	Tuesday	Mar.	19
Panama	P. R. R.	Tuesday	Mar.	26
Allianca	P. R. R.	Monday	April	1
Colon	P. R. R.	Monday	April	8
Advance	P. R. R.	Saturday	April	13
Panama	P. R. R.	Saturday	April	20

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Friday	Feb.	16
Ancon	P. R. R.	Wednesday	Feb.	21
Allianca	P. R. R.	Thursday	Feb.	22
Colon	P. R. R.	Thursday	Feb.	29
Advance	P. R. R.	Wednesday	Mar.	6
Panama	P. R. R.	Wednesday	Mar.	13
Allianca	P. R. R.	Tuesday	Mar.	19
Colon	P. R. R.	Tuesday	Mar.	26
Advance	P. R. R.	Monday	April	1
Panama	P. R. R.	Sunday	April	7
Allianca	P. R. R.	Sunday	April	14
Colon	P. R. R.	Saturday	April	20

NEW YORK TO COLON.

Zacapa	U. F. C.	Wednesday	Feb.	7
Prinz Eitel Friedrich	H.-A.	Saturday	Feb.	10
Sixaolo	U. F. C.	Saturday	Feb.	10
Almirante	U. F. C.	Wednesday	Feb.	14
Carrillo	U. F. C.	Saturday	Feb.	17
Oruba	R. M.	Saturday	Feb.	17
Prinz Sigismund	H.-A.	Saturday	Feb.	17
Santa Marta	U. F. C.	Wednesday	Feb.	21
Prinz August Wilhelm	H.-A.	Saturday	Feb.	24
Turrialba	U. F. C.	Saturday	Feb.	24
Metapan	U. F. C.	Wednesday	Feb.	28
Tivives	U. F. C.	Saturday	Mar.	2
Sibiria	H.-A.	Saturday	Mar.	2
Orotava	R. M.	Saturday	Mar.	2
Tivives	U. F. C.	Saturday	Mar.	2
Zacapa	U. F. C.	Wednesday	Mar.	6
Prinz Joachim	H.-A.	Saturday	Mar.	9
Sixaola	U. F. C.	Saturday	Mar.	9
Almirante	U. F. C.	Wednesday	Mar.	13
Prinz Sigismund	H.-A.	Saturday	Mar.	16
Carrillo	U. F. C.	Saturday	Mar.	16
Magdalena	R. M.	Saturday	Mar.	16
Thames	R. M.	Tuesday	Mar.	19
Santa Marta	U. F. C.	Wednesday	Mar.	20
Prinz August Wilhelm	H.-A.	Saturday	Mar.	23
Turrialba	U. F. C.	Saturday	Mar.	23
Prinz Eitel Friedrich	H.-A.	Saturday	Mar.	30

COLON TO NEW YORK.

Metapan	U. F. C.	Thursday	Feb.	15
Sibiria	H.-A.	Monday	Feb.	19
Tivives	U. F. C.	Tuesday	Feb.	20
Orotava	R. M.	Tuesday	Feb.	20
Zacapa	U. F. C.	Thursday	Feb.	22
Prinz Eitel Friedrich	H.-A.	Tuesday	Feb.	27
Sixaola	U. F. C.	Tuesday	Feb.	27
Almirante	U. F. C.	Thursday	Feb.	29
Prinz Sigismund	H.-A.	Monday	Mar.	4
Magdalena	R. M.	Tuesday	Mar.	5
Prinz August Wilhelm	H.-A.	Tuesday	Mar	12
Thames	R. M.	Tuesday	Mar.	19

NEW ORLEANS TO COLON.

Cartago	U. F. C.	Saturday	Feb.	10
Abangarez	U. F. C.	Wednesday	Feb.	14
Heredia	U. F. C.	Saturday	Feb.	17
Atenas	U. F. C.	Wednesday	Feb.	21
Parismina	U. F. C.	Saturday	Feb.	24
Cartago	U. F. C.	Wednesday	Feb.	28
Abangarez	U. F. C.	Saturday	Mar.	2

COLON TO NEW ORLEANS

Parismina	U. F. C.	Thursday	Feb.	15
Atenas	U. F. C.	Thursday	Feb.	15
Cartago	U. F. C.	Thursday	Feb.	22
Abangarez	U. F. C.	Thursday	Feb.	22
Heredia	U. F. C.	Thursday	Feb.	29
Atenas	U. F. C.	Thursday	Feb.	29

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a.m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 2 p. m.; ships for New York via Kingston on Tuesdays at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, FEBRUARY 21, 1912. No. 26.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Slides in Culebra Cut.

It is estimated that there remain to be excavated from Culebra Cut on account of slides 4,300,000 cubic yards, about 28 per cent of the total remaining excavation from this section, which at the end of January was 14,525,146 cubic yards. The excavation in the Cut is about 84 per cent completed. The additions of material to be excavated do not affect the estimated total cost, because the unit cost of excavation, $0.6188 per cubic yard in the past quarter, is below the estimate by 36 cents a yard. Neither do they affect the estimated time of completion, because the force has steadily increased in efficiency.

West Wing of Gatun Dam.

Since the completion of the hydraulic fill for the east section of Gatun Dam, the dredges which were employed in pumping fill into it have been shifted to operating on fill for the west section, with the present exception of dredge *No. 82*, which is placing a heavy clay fill along the base of the upper approach wall of Gatun Locks.

The two dredges on the north, or sea, side of the dam, one of which is east and the other west of the spillway discharge channel, have not changed their borrow pits, but both are now pumping into the west section. The pipeline from dredge *No. 86*, which is at work east of the channel, connects with a relay pumping station erected about midway between the resident engineer's office and the Spillway field hospital, and passes over the channel on the railroad bridge to the west section. This pumping station was formerly on the north toe of the east wing. A second relay will be connected with this line within a few days. Dredge *No. 85*, which was working on the lake side of the dam, along the Chagres River about half a mile above the spillway intake, has been moved and is now pumping heavy clay along the lower edge of the south toe at a point about 100 yards from the extreme west end of the dam.

The west section of the dam has the appearance of a great arch springing from the spillway on the east to the hills on the west, the arch projecting into Gatun Lake against the pressure of the impounded water. Its length is to be 8,000 feet; its greatest width 3,000 feet, and its final elevation about 105 feet above sealevel. The height of the wing is now about 80 feet above sealevel. It is estimated that 5,621,623 cubic yards of dry and 6,148 343 cubic yards of wet material will be required for the west wing. Of this, 4,104,041 and 4,772,981 cubic yards, respectively, have been placed, so that the wing is now about 75 per cent completed.

About three hundred yards from the west end the toes of the dam pass on both sides of a row of small knolls, the highest of which rises to 110 feet above sealevel. The wet fill is made around these and deep trenches are cut into them to allow the dam to weld together more securely.

Trestle for Concrete Trains at Miraflores.

A trestle has been constructed from the upper to the lower lock level in the east chambers at Miraflores Locks for the purpose of hauling concrete from the auxiliary mixing plant in the east wall of the upper chamber to the placing cranes and derricks in the lower chamber. Double tracks of 3-foot gage have been laid, with a fifth rail placed 2 feet outside of one of the tracks, to make a 5-foot track for the occasional use of locomotives and cranes which have the gage made locally standard by the Panama railroad. The trestle is 430 feet long, with a grade of 7 per cent. The supports, the highest of which is 31 feet, are trapezoidal bents of heavy timbers, placed 15 feet apart and connected by 10 stringers, 8 by 16 inches in section. Square cross ties, 8 inches on the side, are placed on 2-foot centers. Practically all of the timbers came from the dismantled trestle which had been in similar use at Pedro Miguel Lock.

Along one side of the trestle, at an elevation of 2 feet 9 inches above the top of the rails, extends a platform, 2 feet 6 inches wide. This is for the use of the men who attach to the buckets of concrete, which are brought on flat cars from the mixer, the hooks from the crane which raises the buckets and carries them to the place at which they are to be dumped.

Lower Chamber of Miraflores Locks.

The laying of concrete in the west wall for the lower lock at Miraflores has been begun and foundation has been placed for a distance of about a hundred feet. In the center wall only a portion of the sills at the upper end has been laid. The foundation for the east side wall, where two berm cranes have been engaged in mixing and placing concrete, has been extended about 500 feet from the upper end and the wall over this portion is in various stages of completion, from several feet above foundation to about three-fourths of full height. For a distance almost as great the floor for the east chamber, with its arrangements of drainage culverts and "lily forms" beneath, is completed from the side wall to the site of the center wall. The site for the lower chambers has been excavated to full depth, which is such as to make the level of the floor 51 feet below mean tide, over a distance of 500 feet from the upper end and the eight steamshovels employed there are advancing to the south in the wake of the hydraulic monitors.

Buildings in Lake Area.

In preparation for the rise of Gatun Lake, buildings in the villages of Bohio, Frijoles, San Pablo, and Tabernilla have practically all been sold or destroyed, or removed to other villages and reconstructed by the Commission.

At Bohio the schoolhouse was demolished and all of the camps and quarters, except a few small buildings left standing temporarily for construction purposes, were sold. Of these there were 19 buildings and the aggregate receipts were $707. At Cartagenita 11 camps were sold for $610; "silver" married quarters and some sheds aggregated in value $77. A few construction buildings are still standing. No houses were moved from these villages by the Commission.

The police station at Frijoles was moved to New Frijoles, on the relocated line of the Panama railroad. The sanitary storehouse was sold for $5, and the "silver" bachelor and married quarters (2 buildings) were sold for $10 and $60, respectively.

At San Pablo and its associated villages of Caimito and Mamei, 43 buildings, comprising "gold" and "silver" married and bachelor quarters, the dispensary, storehouses, camps, commissary building and a number of smaller structures, were sold for a total of $2,133.50. Two camps, a colored schoolhouse, some married quarters, the dog pound and outhouses were demolished. One "gold" married quarters house was removed to Corozal for bachelor quarters; another to Colon to be erected at the quarantine station, and three to Las Cascadas for the Tenth Infantry. The jail was taken to Monte Lirio and a European laborers' mess was moved to Mandingo, to be converted into a schoolhouse.

From Tabernilla the police station was removed to Gamboa; two "gold" family houses, one non-housekeeping quarters and the material from a European laborers' messhall were removed to Las Cascadas for the Tenth Infantry. The commissary building is to be made into bachelor quarters at Corozal; the schoolhouse was removed to Mount Hope and one "gold" married quarters was taken to Gatun for employes of the McClintic-Marshall Company. A number of sheds, small storehouses, range closets, the post mortem building and similar small structures, were de-

NOTES OF PROGRESS.

(*Continued.*)

molished. Forty-seven buildings, including quarters, fire station, church, schoolhouse and camps, were sold for an aggregate of $3,448.25.

Corrected Time Table.

The Panama railroad timetable published in this issue of THE CANAL RECORD contains corrections made after the publication of the table in the issue of February 7. The most important changes are that Train No. 4 leaves Panama at 10.55 o'clock week day mornings instead of at 10.40, and Train No. 5 leaves Colon at 10.25 o'clock week day mornings instead of at 10.30 a. m.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 80 per cent completed, 182,102 cubic yards, out of a total of 225,000, having been placed at the close of work on February 17. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked	No. Mixers.
February 12	368	15.00	2
February 13	500	16.00	2
February 14	496	16.00	2
February 15	516	16.00	2
February 16	388	16.00	2
February 17	374	12.30	2
Total	2,642	91.30	2
Previously reported	179,460		
Grand total	182,102		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending February 17, follows:

DATE.	Hours worked.	Cubic Yards.
February 12	2.05	1,240
February 13	3.40	2,100
February 14	3.20	1,495
February 15	4.50	2,234
February 16	2.50	1,398
February 17	3.05	1,729
Total	19.50	10,196

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending February 17, follows:

DATE.	Hours worked.	Cubic Yards.
February 12	5.55	2,336
February 13	6.10	2,359
February 14	4.00	1,036
February 15	6.40	2,055
February 16	7.30	3,070
February 17	7.25	2,471
Total	37.40	13,327

To Clean Out Colon Trunk Sewer.

A requisition has beeen placed in the States for a pump to be used in cleaning out the D Street sewer in Colon, which, on account of the slight fall between the summit and the point where it discharges into the bay, is likely to become clogged. The pump will be an electrically driven, single stage, horizontal, centrifugal pump, direct connected to an induction motor, both mounted upon a cast iron base which in turn will be mounted upon a four-wheel, four-horse truck, in order that it may easily be moved from place to place. The material to be pumped will be sea water containing foreign matter such as coral sand, waste, pieces of clothing, street sweepings, pieces of wood, etc., screened down to approximately 5 by 5 inches; weight of fluid about 66 pounds per cubic foot. The pump must have a capacity of 4,000 gallons per minute against a total head of 42 feet, suction diameter 14 inches, discharge 12 inches.

Missing Men.

Any one having information regarding the whereabouts of Bennett Gordon Talley of Tennessee, who is supposed to be on the Isthmus, is requested to communicate with the American Legation, Panama.

The American Legation in Panama desires information concerning the whereabouts of Alfred J. Lodo.

CONCRETE WORK IN THE LOCKS.

Over 78 per cent of the concrete for the locks is in place, the amount at the close of work on February 17 being 3,308,114½ cubic yards, out of a total of approximately 4,199,400. A total of 23,648½ cubic yards of concrete was laid in the locks during the week ending February 17.

GATUN LOCKS.

Over 90 per cent of the concrete for the system of three twin locks at Gatun has been laid, thea mount in place at the close of work on February 17 being 1,814,710½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending February 17, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
February 12	688	11.17	5	208	2.40	0	....	989½
February 13	700	11.54	3	240	3.40	1	....	997
February 14	412	6.04	3	302	4.40	2	....	765½
February 15	704	11.06	4	90	1.40	1	....	848½
February 16	742	12.56	4	8	.10	1	....	785
February 17	804	12.54	4	124	1.40	1	....	1,008
Portable mixers	....	....	......	371½	....	......	....	....
Total	4,050	66.11	3.83	13,43½	14.30	1.16	....	5,393½
Previously reported	....	....	......	....	....	......	....	1,809,317
Grand total	....	....	......	....	....	......	....	1,814,710½

The 371½ yards shown for the portable mixers (of which 281½ are reinforced concrete) were placed on the following days: February 12th, 93½; February 13th, 57; February 14th, 51½; February 15th, 54½; February 16th, 35; February 17th, 80.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 97 per cent completed, 813,985 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on February 17. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
February 12	264	8.00	2	252	31.25	5	....	516
February 13	324	9 50	2	306	35.50	5	....	630
February 14	192	6.00	2	228	32.00	5	....	420
February 15	202	6.00	2	155	17.50	4	....	357
February 16	232	7.00	2	151	22.50	4	....	383
February 17	130	4.00	2	203	22.50	4	....	333
Total	1,344	40.50	2	1,295	161.25	4.5	....	2,639
Previously reported	....	....	......	....	....	......	4,423	811,346
Grand total	....	....	......	....	....	......	4,423	813,985

MIRAFLORES LOCKS.

Over 49 per cent of the concrete for the system of two twin locks at Miraflores was in place on February 17, the total amount on that date being 679,419 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.	*Cu. Yds.*					*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Feb. 12	1,896	53.83	8	236	3.83	2	254	27.00	4	....	2,386
Feb. 13	1,864	56.50	8	280	4.62	2	230	20.00	3	....	2,374
Feb. 14	1,850	54.50	8	330	5.67	2	329	29.00	4	....	2,509
Feb. 15	1,578	46.83	8	414	6.00	2	789	38.00	6	....	2,781
Feb. 16	1,912	47.33	8	408	6.00	2	396	25.50	4	....	2,716
Feb. 17	2,072	49.00	8	358	5.83	2	420	32.67	5	....	2,850
Total	11,172	307.99	8	2,026	31.95	2	2,418	172.17	4.33	....	15,616
Previously reported	....	....	......	....	....	......	....	....	......	3,693	663,803
Grand total	....	....	......	....	....	......	....	....	......	3,693	679,419

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The Executive Board of the Canal Zone Federation of Woman's Clubs met at Gorgona on Friday, February 9. Mrs. C. H. Stoddard of Gatun was made first vice-president, vice Mrs. E. H. Colip, resigned; Mrs. A. O. Herman of Gorgona, second vice-president; and Mrs. Henry Ropes Trask of Culebra, third vice-president. The board authorized a revision of the Federation by-laws in order to admit a class of individual members, or what will be known as general members. This class of members will be composed of women residing in Canal Zone villages where there are no federated clubs. General members will have all the rights and privileges of regular members; they may hold office, vote on all questions and act on any Federation committees. The annual dues for such members will be one dollar, payable at the time of admittance to membership. A membership committee was appointed, composed of the president and the two secretaries. Any woman wishing to become a general member, who is endorsed by club women, should communicate with the corresponding secretary, Mrs. Thomas E. Brown, Jr., of Cristobal.

In connection with the Federation fund for the education of the native blind boy, the board appointed a central committee composed of Mrs. Trask, Mrs. S. E. Calvit of Gorgona and Mrs. Herman. The object of this committee is to centralize the efforts of the clubs in raising the $300 pledged, and to avoid duplication of efforts. The committee is ready to advise with club presidents at any time, and would be glad to receive reports of the work. All funds intended for this purpose should be forwarded to the treasurer, Central Committee, Mrs. Calvit, Gorgona. Communications regarding the Federation pins should be addressed to the Federation treasurer, Mrs. J. E. Westberg, Empire.

Owing to the holiday on February 22 the regular meeting of the Ancon Study Club for this week will be suspended. The members of the club will go to Culebra on Friday, February 23, for the purpose of inspecting the Canal models in the office of the Chairman, and to view the Cut from the new observation platform at the point behind the Commission clubhouse. The next meeting will be on February 29. The month's program on Panama will be closed with a paper on the history of the Panama railroad. At the meeting on February 15, held at the home of Mrs. White, Ancon, a paper on the American occupation was read by Mrs. White, and one on the sanitation of the Canal Zone by Mrs. J. C. Crawford.

Church Work.

The Altar Guild of St. Luke's Chapel, Ancon, will hold weekly meetings during Lent, beginning on February 27. The meetings will be held at the home of Mrs. J. P. Fyffe every Tuesday at 9.30 o'clock. They will be devoted to reading and sewing, according to the usual custom. The afternoon meetings will be suspended until after Easter Mrs. H. C. Hanson resigned as treasurer and Mrs. Charles W. Barber was elected to fill her place. The next meeting of the guild will be at the home of Mrs. Charles F. Mason on Tuesday, February 20, at 3.30 p. m.

On Ash Wednesday, February 21, there willbe a service in St. Luke's Chapel at 9 a. m., and during Lent there will be services in the church on Wednesday and Friday mornings at the same hour.

The upper story of the public school building at Culebra has been remodelled and assigned to the Union Church for the purpose of holding religious services. Sunday school is at the usual hour, 9.30 a. m., and preaching service, with the Rev. A. A. Nellis in charge, in the evening at 7.45.

The Woman's Foreign Missionary Society of the Methodist Episcopal Church at Panama will hold its next meeting in the Sunday school room in the public school building at Culebra. The members of the society who reside in Culebra will be the hostesses.

The pupils of the Methodist Episcopal school at Balboa held a sale and entertainment in the mess hall on Wednesday, February 14. About $40 was raised. The Isthmian Sunday School Association has presented the organ purchased for the Sunday school at Tabernilla to the Balboa Sunday school. There are 30 pupils in the school, which was organized by Miss Keyser in August, 1911.

At the Gatun Union Church patriotic exercises were held on Sunday, February 18. There were three ten minute addresses: "Washington as a Soldier," by Dr. E. I. Vaughan; "Washington as a Statesman," by Mr. C. C. Carr, and "Washington as a Citizen," by Mr. W. C. Geyer. On Sunday evening, February 24, a memorial service will be held under the auspices of the veterans of the Spanish war.

Cristobal Union Church.

On Saturday evening, February 17, the Cristobal Union Church held its annual banquet at the Washington Hotel. Covers were laid for 125 persons. Mr. J. A. Smith was the toastmaster. This is the fourth annual banquet that the church has held. The church was organized in 1907, and reorganized a year later. The present pastor, the Rev. Carl H. Elliott, was appointed in January, 1909.

The new church building was dedicated on Sunday evening, February 18, the speakers for the exercises being Col. William L. Sibert, Dr. C. C. Pierce, and the Rev. J. C. Elliott. The Rev. Harry Compton, pastor of the Methodist Episcopal Church at Panama, preached the dedication sermon On Sunday, February 25, the Sunday School will hold its first session in the new church. The building as reconstructed consists of an auditorium, thirty-five by thirty-six feet, with a seating capacity of about 300, a small room at the back for the primary class, and a study for the pastor.

A Baby Show.

Forty babies, between the ages of six months and two years, were exhibited at the Commission chapel, Gatun, under the auspices of the Gatun Sunshine Society on Wednesday afternoon, February 14. Votes were sold and prizes were awarded in three classes as follows: 1st class, between one and two years, William Wells; 2nd class, six months to one year, William Rogers; under six months, Charlie Decker. During the afternoon punch and cakes were sold. The entertainment netted nearly $50, which will be forwarded to international headquarters in New York for the blind babies' work.

Panama Canal Service Medal Association.

The annual meeting of the Panama Canal Service Medal Association will be held in the hall over the Quartermaster's Office, Gorgona, at 11.30 a. m., March 3. All members are requested to be present.

United Spanish War Veterans.

A regular meeting of Camp Chagres No. 2, U. S. W. V. will be held in the I. C. C. Lodge Hall, Empire, at 2.30 p. m., Sunday, February 25. Several recruits are to be mustered in. Refreshments will be served.

Sight-Seeing Trains.

The schedule for the sight-seeing train is as follows:

Monday, Wednesday, Thursday, and Saturday trip through Culebra Cut and Pacific Division—Train leaves Panama railroad station at 7 a. m., goes through Culebra Cut, then to Culebra where opportunity will be given to see the work from the Observation Platform and to view the lock models in the Administration Building. Lunch will be served to tourists at 12.45 o'clock at the Commission hotel. Persons wishing to go to Colon may take the train that arrives at Culebra at 11.30 a. m., and to Panama, that which arrives at 12 19 p. m.

The train will leave Culebra station at 1.30 p. m. for the trip to Pedro Miguel Locks, Miraflores Locks, and Dam, and the Pacific entrance, returning to Panama in time to allow passengers to take the 5.25 p. m. train for Colon. Persons wishing to make the trip over the Pacific Division only should take the regular passenger train from Panama at 10.55 a. m., getting off at Pedro Miguel where they can obtain lunch at the Commission hotel. The sight-seeing train leaves the station at 2 p. m.

Tuesday and Friday, Gatun Locks and Dam—The train will leave Colon at 8 a. m. and 1 p. m., making two trips, the departure from Gatun station for the tour over the locks and dam being made at 8.40 a. m., and 1.30 p. m. After the completion of the afternoon trip the train will go direct to Panama. Persons wishing to take the Atlantic Division trip from Panama must go to Gatun by one of the morning trains leaving Panama at 6.35 and 10.55 o'clock respectively. These trains arrive at Gatun at 8.41 a. m., and 1.00 p. m. respectively.

Regular fare will be charged between Panama and Pedro Miguel, Colon and Gatun, and Gatun and Panama; and one dollar extra will be charged for the trip over each division.

PERSONAL.

The Hon. W. L. Fisher, Secretary of the Interior, and a party of friends will arrive on the Isthmus from New York on Thursday, February 22. Postmaster General Hitchcock, who was expected to accompany them, was unable to do so.

Baron Hengelmuller, Austrian Ambassador to the United States, and Captain de Chambrun, Military Attache of the French Embassy at Washington, each with a party, will arrive from New Orleans on February 22.

Porto Bello Chess Club.

The result of the handicap tournament played in December and January follows: Prize—Set Staunton chessmen, presented by C. D. Morgan, won by R. C. Goodfellow. Score—Goodfellow, .875 per cent; Hanbury, .792; Poole, .693; Morgan, C. D., .666; Tuttle, .625; Wright, .571; Rogers, .571; Corrigan, .500; Snider, .455; Schreiber, .444; McDevitt, .409; Morgan, C. W., .385; Colberg, .227; Mackintosh, .154 per cent.

PUMPS AND MOTORS.

Drainage of Lock Sumps and Operation of Chain Fenders.

A requisition has been made in order that bids may be requested for motors, pumps, and float switches and pump motor starters for the locks, in accordance with the following schedule:

Class 1. Motors—Eighteen motors for guard valve machines; 80 motors for hand-rail mechanism with 80 hand-rail gearings; 22 motors for spillway gate machines.

Class 2. Pumps—Forty-eight pumps for chain fender machines with 48 direct-connected motors; 48 pumps for sumps at bottom of chain fender pit with 48 motors; 92 pumps for sump at bottom of miter gates with 92 motors; 9 pumps for drainage sump with 9 motors; 3 pumps for main culvert, 3 motors; 7 portable pumps for machinery and cable pits with 7 motors; total 207, pumps and motors

Class 3. Float Switches and Pump Motor Starters—Forty-eight float switches for chain fender sumps; 92 float switches for miter gate sumps; 9 float switches for drainage sumps; 48 starters for chain fender sump pumps; 92 starters for miter gate sump pumps; 9 starters for drainage sump pumps; 3 compensators for culvert pumps; 7 compensators for pit pumps. Total of 149 float switches, 149 automatic starters and 10 compensators.

It is proposed to purchase two motor-driven pumps for chain fender machines and to test them thoroughly on the Isthmus, after which the remaining 46 will be purchased, the result of the tests determining largely the manufacturer from whom they will be purchased. Alternative bids covering eight portable pumps are called for in lieu of the 92 bilge pumps for the miter gate sumps. In case the alternative is accepted, the portables would be moved periodically from gate to gate.

MOTORS.

All motors are to be of the induction, mill type, possessing a high-torque, squirrel-cage winding, arranged to operate upon a 3-phase, 25-cycle, 220-volt system. The motors are to be totally inclosed and moisture-proof, similar in all respects to motors previously specified for other motors to drive the lock machinery; the rating is to be standard and such that an overload of 25 per cent may be carried for ten minutes without injurious heating and a 100 per cent overload may be carried momentarily; the pump motors are to operate in emergency for short periods either under water or partially submerged from wave wash. The motors for the lock machinery are to be of the horizontal type, whereas the majority of the pump motors are to be of the vertical type.

Guard Valve Motors—The guard valve machines are designed to operate the valves that guard the intakes of the side wall culverts at the upper end of each flight of locks. These valves proper are similar to the rising-stem gate type used elsewhere in the main supply culverts, but the machines are somewhat different from those used in operating the other gate valves. The 18 motors required for running the machines are to be rated at a full-load speed of 460 r. p. m. (synchronous, 500 r. p. m.) and a full-load torque of not less than 295 pound-feet.

Hand Rail Motors—Thesh motors ara required to furnish the motive power for raising and lowering the hand-rails of the footwalk across the tops of the miter gates. These walks provide a passageway for crossing the locks when the gates are closed, and the hand-rail guards the passage. When the gates are opened and in their recesses in the lock walls, the hand-rails, if allowed to, would extend above the level of the top of the lock wall and interfere with the movement of the towing line. A mechanism has therefore been devised, and interlocked with the miter gate moving machine, by which the hand-rail will be automatically lowered when the gate is opened, and raised when the gate is closed. The motors for this machine are to be rated at a full-load speed of 625 r. p. m. (synchronous, 750 r. p. m.) and a full-load torque of not less that 63 pound-feet.

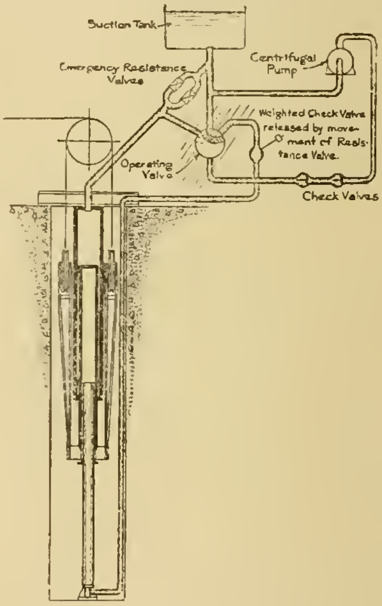
Spillway Gate Motors—The motors for the spillway gate machines are to operate the crest gates that will be mounted upon the top of the spillway dams at Gatun and Miraflores —14 at the former and 8 at the latter place. The operation of the spillway gates is described in THE CANAL RECORD of October 25, 1911. The motor is direct-connected to a long shaft provided with worms at both ends. Through the center of the two meshing worm-wheels, are screw stems which carry heavy counterweights. When the motor is operated the screw stems and counterweights are either raised or lowered To the upper end of each screw stem is attached a chain which rides over an idler at the top of the concrete pier, and the spillway gate is suspended from the outside ends of the two chains. The rating of these motors is the same as that for the hand-rail mechanism motors.

MOTOR-DRIVEN CENTRIFUGAL PUMPS

The pumps are required for two general classes of work; first to supply water for the hydraulic operation of the fender chain machines, and secondly to unwater various sumps in the locks. In all, there will be required 207 (or 123) pumps, according to whether or not the alternative proposal upon sump pumps for the miter gates is accepted. In general the pumps will be of two classes—horizontal and vertical—and will be of either the volute or turbine centrifugal type, preferably single-stage, as may be best suited to the work they have to perform. Pumps of various capacity and for various duties are required, but if practicable the smaller-sized pumps are to be made identical, particularly in respect to the size and rating of the driving motor. Parts entering into the construction of pumps of the same style and capacity are to be interchangeable. Having in view the character of the work to be performed, the pumps must be designed and manufactured with a view of operating successfully under adverse climatic and installation conditions.

Consideration—The proportions and shapes of water passages, impellers, vanes, outlets, and bearings are to be carefully determined. Extreme care must be used in the design of water passages and cross sections; rapid changes of velocity will not be allowed. Most of the pumps will handle the fresh water of Gatun Lake with average temperature of 80 to 85 degrees Fahrenheit, but the sump pumps at the lower ends of the locks will handle water that has been mixed with the sea water of the lower channel, and is therefore saline, having a specific gravity of approximately 1.025.

Chain Fender Pumps—The duty of the pumps required for the chain fender machines is explained in an article on the chain fenders that appeared in THE CANAL RECORD of October 4, 1911. These fender chains are stretched across the lock chambers in front of certain miter gates for the purpose of preventing a ship that might become unmanageable from ramming the gates. The chains are lowered into a well in the floor of the lock chamber whenever it is desired to allow a ship to pass. The mechanism for lifting and lowering the chain consists of a fixed plunger operating within a cylinder which in turn operates within another cylinder, the resulting movement either up or down, actuating the chain which, by a system of pulleys, is given a movement of 4 feet for every foot of movement in the cylinders. The intermediate cylinder is moved downward by introducing water under pressure to the top of the outer cylinder. This change of flow is produced by varying the position of a specially designed operating valve by means of a remotely controlled solenoid device. A resistance valve provides for the gradual release of the chain if struck by a vessel. In lowering the chain the pump is required to work against a pressure varying from zero at starting with a rapid rise driving first foot of plunger stroke to a full-load of 130 pounds per square inch, which pressure is maintained within comparatively narrow limits throughout the entire stroke. The total quantity of water required to be delivered under these circumstances is 550 gallons for the maximum length of operating stroke of 21 feet 6 inches, and 350 gallons for the minimum stroke of 13 feet 6 inches. The maximum time allowed for either lowering or raising chain is one minute. In raising the chain, the total quantity of water to be pumped for the maximum stroke of 21 feet 6 inches is 1,260 gallons, and for the minimum stroke of 13 feet 6 inches, 800 gallons, both capacities being pumped at reduced pressures. The varying duty cycle occasioned by broad differences in pressure and water discharge occasioned by friction, the weight of the water displaced when the chain is immersed, and the full weight of the chain when free of the water, as well as the difference between raising and lowering the chain, must be met by the pump without overloading the motor.


Suction Tank
Centrifugal Pump
Emergency Resistance Valves
Weighted Check Valve released by movement of Resistance Valve.
Operating Valve
Check Valves

GENERAL LAYOUT OF FENDER CHAIN OPERATING MACHINERY.

Chain Fender Sump Pumps—The pit in which the chain fender machine is contained will be subjected to an accumulation of bilge from drippings of the chain as it enters the pit, leak from the cylinders, slight wave wash through the hawse pipe, and drainage from the machine room floor. The sump pumps to drain the pit will be of the standard vertical centrifugal type with the motor mounted above and directly connected to the pump. The pump motor will be automatically controlled by means of a float switch, which will throw the motor into operation whenever the level of the bilge in the sump rises to the level of approximately one inch below the top of the sump that is one inch below the level of the floor of the pit.

Miter Gate Sump Pumps—The miter gates are built up of steel girders covered with steel sheathing, bulkheaded vertically to form four independent compartments approximately 7 feet wide at the center of the gate leaf. In order to maintain watertight compartments in each of the leaves it has been necessary to lay out a drainage system that prevents communication between the compartments. It is not expected that any extensive bilge will collect in these compartments, unless the sheathing proves to be exceptionally leaky. The first proposal is for pumps of the vertical, motor-driven, centrifugal, stationary type, multi-stage if necessary. but preferably single-stage, mounted at the bottom of the gate and permanently connected to a horizontal suction pipe, which pipe inter-connects the vertical compartments. Ordinarily these pumps will be manually controlled from the top of the gate leaf and the bilge will be emptied at fixed intervals. Automatic operation by means of a float switch located alongside the motor is provided in case the water in the compartment which contains the pump accidentally reaches the pump motor. These pumps will have a suction and a discharge of 2 inches in diameter, will operate against a maximum head of approximately 90 feet and a minimum of 47 feet, and must have a minimum discharge capacity at maximum head of 75 gallons of water per minute.

An alternative proposal for pumping with portable pumps will be considered. The portable pump unit would be of a self-contained type which is capable of being transported upon a wheeled carriage from point to point on top of the lock walls. The pump is to be motor-driven and provided with a lifting ring by means of which the entire unit can be lowered with a crane (or other special hoisting device) through the mainshaft down to the level of the bilge at the bottom of the gate leaf. Portable pumps permit of discharging the accumulations of especially leaky gates (which should be a small percentage to the total number of gates), without the necessity of investing in 92 fixed pumps for all the gate leaves, the majority of fixed pumps operating at very rare intervals.

Pumps for Lowering Drainage Sump—At the lower end of each lock, under the arches, there is a small area of the lock drainage system which is below the surface of the water in the lower channel, and it is necessary to pump the bilge that accumulates here, which bilge is chiefly wave wash, through the miter gate room openings. This will be done by a pump which will automatically clear the sump of bilge. This pump will be of the vertical, motor-driven, single-stage, centrifugal, stationary type, fixed in the concrete sump, and will be submerged without priming connections. The motor will be of the vertical induction type, and will be controlled by a starter which is automatically actuated by a float switch. The pump will have a suction 6 inches in diameter, a discharge 5 inches, a maximum head of 15 feet, a minimum head of 11 feet 6 inches, and a minimum discharge at maximum head of 800 gallons per minute.

Pumps for Center Wall Culverts—A description of the method of controlling the flow of water from the center wall culverts into the lock chambers was published in THE CANAL RECORD of November 15, 1911. It will be desirable at intervals to unwater the center wall culvert in order to make repairs to the cylindrical valves, and to accomplish this unwatering the discharge openings will be bulkheaded off and the culvert pumped dry. One vertical, semi-portable pump arranged with bails for suspension from a lift-line will be required for each of the locks. The pump and motor will be mounted compactly together In the usual operation the lock chamber will be unwatered, leaving the water in the culvert approximately 25 feet deep, the maximum depth being about 62 feet. The pump will be lowered into the water step by step until the culvert is pumped dry, the whole operation requiring about eight to ten hours. These pumps will have a suction diameter of 15 inches, a discharge of 12 inches, a maximum head of 70 feet, a minimum head of 10 feet, and a minimum discharge at maximum head of 4,200 gallons a minute.

Pumps for Deep Pits and Shafts—Throughout the entire length of all the locks certain deep machinery pits and cable shafts have been installed, and on account of the small amount of bilge that will probably collect at the bottom it is not necessary to equip each pit and shaft with separate pumps. Portable pumps are therefore provided to unwater them. These pumps will operate against widely divergent heads varying from a few feet to 100 feet. The portable unit will be mounted upon a wheeled carriage to facilitate movement from place to place, and will be fitted with bails to permit lifting by locomotive crane into pumping position. These pumps will have either a 3 or $3\frac{1}{2}$-inch suction, a $2\frac{1}{2}$ or 3-inch discharge, maximum head of 100 feet, a minimum head of 10 feet, and a minimum discharge at maximum head of 100 gallons per minute.

Float Switches—As has been indicated above, the chain fender sumps, miter gate sumps, and drainage sumps are to be automatically controlled, depending upon the level of the bilge in the sump. The automatic operation is to be performed by means of a float and quick-break switch, which device will throw the motor into operation as the water reaches a certain predetermined level in the sump, and throw the motor out again when the bilge has been discharged. The mechanism for operating the quick-break switch will consist of a copper float attached to a chain which rides over a couple of pulleys, the float being counter-weighted. The chain is supplied with lugs to engage an arm on the quick-break switch, which arm actuates the switch. The starters to operate in connection with the quick-break switches will be of the double-pole type for making and breaking the circuit to a three-phase motor, and are very similar to the contactors described in the article published in THE CANAL RECORD of February 7, 1912.

EXECUTIVE ORDER.

To Provide an Inexpensive Method for the Administration of Estates of Deceased and Insane Persons in Certain Cases, and to Repeal Act 24, of the Canal Zone Laws, and the Executive Order Amendatory Thereto.

By virtue of the authority invested in me, I hereby establish the following Executive Order for the Canal Zone:

Section 1. Whenever an employe in the service of the Isthmian Canal Commission, or the Government of the Canal Zone, or of the Panama Railroad Company, shall die, leaving an estate in the said Zone, or whenever such decedent, being a citizen of the United States, leaves an estate in the Canal Zone or in the Republic of Panama; and the said estate consists of personal property only, not exceeding in value the sum of $1,000.00, and a regular administration shall not have been instituted in the courts of the Canal Zone, the Collector of Revenues for the Canal Zone is hereby authorized and directed to take possession of the estate of the said deceased person and to make a complete inventory thereof and present the same to the Judge of the Circuit Court of the First Judicial Circuit of the Canal Zone, to be filed by the said judge in the records of his court when approved by him.

Section 2. The Collector of Revenues, with the approval of the Judge of the Circuit Court of the First Judicial Circuit, out of the assets of the estate, may pay the burial expenses of the said deceased person and all expenses necessarily incurred in securing possession of the estate and of administering the same until it is turned over to the heirs or other parties entitled thereto, and he may also pay the expenses of the transportation of the remains of the decedent to the United States, if he is an American Citizen and such transportation is desired by the surviving relatives. He shall also pay the lawful debts of the deceased, with the approval of the Circuit Judge.

Section 3. In case the deceased shall have to his credit with the Isthmian Canal Commission, the Government of the Canal Zone, or the Panama Railroad Company, any sum as salary or other acknowledged claim, the amount so due shall be paid to the Collector of Revenues and be by him administered as a part of said estate in the manner prescribed by this Order; *Provided*, that if there should be a regular administration upon the estate of the deceased in a court of competent jurisdiction in the Canal Zone, then the sum due to the deceased shall be paid to the regular executor or administrator of the estate appointed by said court.

Section 4. After all of the expenses connected with the burial of the deceased person and in securing possession of the estate and in otherwise administering the same, together with the lawful debts of the deceased, have been fully paid, the balance of such estate shall be paid by the Collector of Revenues to the parties entitled to receive such estate; but before making such payment, the approval of the Judge of the Circuit Court must be obtained.

Section 5. If the deceased employe is an alien and has no heirs in the Canal Zone, the Collector of Revenues is hereby authorized and directed to deliver the residue of the decedent's estate to the diplomatic or consular representative of the country of which the decedent was a citizen or subject accredited to the Rebpulic of Panama, to be delivered by such representative to the heirs of the decedent; if the deceased is a citizen of Panama, the residue of the estate may be delivered to his heirs in Panama, or to the authorities designated for that purpose by the Panamanian laws or decrees.

Section 6. After the estate has been fully administered by the Collector of Revenues and the residue thereof has been turned over to the parties entitled to the same according to this Order, the Collector of Revenues shall file a final report of his acts and doings in the estate with the Judge of the Circuit Court, and accompany said report with the proper vouchers and other supporting papers, showing the receipts and disbursements made by him in administering the estate, and the Circuit Judge shall examine said report, and if he finds it correct, he shall approve the same and discharge the Collector of Revenues as such administrator.

Section 7. If the decedent should leave a widow, or minor children, or dependent relative, in necessitous circumstances to be determined by the Circuit Judge, the residue of the estate of the decedent, after all of the funeral expenses, the expenses of transportation of the remains of the deceased to the United States, if the remains are transported, and the other expenses incident to the administration of the estate are fully paid, shall be delivered to said widow, or minor children, or dependent relative, as the case may be, for their maintenance and support; and, except as in this section otherwise provided, the claims of the widow, minor children, or dependent relative of the deceased for this allowance shall be superior to the claims of the creditors of the deceased; *provided*, that such preference in favor of the widow, minor children, or dependent relative shall not exceed $500.00.

Section 8. If an employe of the Isthmian Canal Commission, the Government of the Canal Zone, or the Panama Railroad Company should be adjudged insane by the Canal Zone Courts and have an estate not exceeding $1,000.00 in value and consisting entirely of personal property, and no regular guardianship of such estate shall have been instituted in the Canal Zone Courts, it shall be the duty of the Collector of Revenues to take possession of the estate of such insane person, including any salary or other acknowledged claim due to such employe by the Isthmian Canal Commission, the Canal Zone Government, or the Panama Railroad Company, and make a complete inventory thereof and file the same with the Judge of the Circuit Court of the First Judicial Circuit of the Canal Zone; and under the direction and with the approval of the Judges of the said Court, the Collector of Revenues may pay the lawful indebtedness due by the insane person, as well as the expenses incurred in administering said estate, and he shall hold the residue of the estate subject to the orders of the Circuit Judge.

If the insane person has a wife, minor child or children, or dependent relative, in necessitous circumstances, to be determined by the Circuit Judge, the court shall set aside a sufficient sum out of the said estate for their maintenance and support, not to exceed the sum of $500.00 in the aggregate, to be paid in such manner and at such times as the Circuit Judge may prescribe, and which allowance shall be superior to all other claims against the estate; and the order of the Judge shall be sufficient authority for the Collector of Revenues to make such payment, taking proper receipts therefor.

In case the insane person is a citizen of the United States and has no wife, child or children, or dependent relative, the Collector of Revenues shall retain possession of the residue of said estate, after the debts and other charges have been paid as above mentioned, and hold same subject to the orders of the court.

If the insane person is a Panamanian and has no wife, child or children, or dependent relative, the residue of the estate, with the approval of the Circuit Judge, may be delivered by the Collector of Revenues to the authorities designated for that purpose by the Panamanian laws or decrees.

If the insane person is an alien, other than a Panamanian and has no wife, child or children or dependent relative, the Collector of Revenues, with the approval of the Judge of the Circuit Court, shall pay over the residue of the said estate to the diplomatic or consular representative of the country to which the insane person belongs accredited to the Republic of Panama, to be disposed of by him in accordance with the laws of his country.

Section 9. When the estate of the insane person is finally administered and the moneys paid over to the person or persons entitled to receive same as herein provided for, the Collector of Revenues shall make his final report on said estate to the Judge of the Circuit Court, and the Court shall approve the same if found to be correct, and discharge the Collector of Revenues from such guardianship.

Section 10. When the Collector of Revenues shall have performed his duties in accordance with the provisions of this Order and shall have delivered the estate or paid over the sums due from the funds of said estate to the person or persons entitled thereto in accordance with the orders of the court, such settlement of the estate shall be deemed a lawful settlement thereof, and the Collector of Revenues shall not be accountable on his bond and shall not be liable to any other person for the estate so administered by him; *provided*, that nothing in this Order shall prohibit the lawful heirs or claimants of any person whose estate has been settled in accordance with the provisions of this Order from bringing suit in any court having jurisdiction of the subject-matter and of the parties to the action against the person or persons who received the estate by virtue of the provisions of this act, and from recovering the same or the value thereof from such person or persons upon proof that the estate has been delivered to the persons not entitled to receive and retain same.

Section 11. This Order shall apply to the estate of persons who died or became insane prior to the passage of this Order, as well as to those who die or become insane after the date of its promulgation.

Section 12. If the Collector of Revenues shall deem it to the best interest of the estate of the deceased or insane person to convert any part or all of the property of the estate into cash, he may dispose of the same by public or private sale, with the approval of the Circuit Judge.

Section 13. The proceedings to be had before the Judge of the Circuit Court as herein provided for may be conducted without the necessity of any prior notice being given of the same, either by publication or otherwise; and the judge may proceed in such cases in open court or in chambers, and shall give precedence to such matters over all other business pending before him, in order that the estates may be administered and closed as expeditiously as the rights of all parties concerned may permit. No court costs of any kind shall be taxed against estates administered under the provisions of this Order.

Section 14. The official bond of the Collector of Revenues shall be security for the moneys and properties received by him in the performance of the duties prescribed for him by this Order.

Section 15. Act 24, of the Canal Zone Laws, entitled:

> "An Act providing for an inexpensive method of Administration upon the Estates of Employes of the Government of the Canal Zone, or of the Isthmian Canal Commission, who are citizens of the United States and who die in the Canal Zone, Isthmus of Panama, leaving estates of small value upon which regular administration is deemed inadvisable."

enacted March 1, 1905, and Executive Order dated June 22, 1907, effective July 1, 1907, and Executive Order dated July 21, 1909, respectively, amendatory of said Act 24, and all laws in conflict herewith, are hereby repealed.

Section 16. This Order shall take effect 30 days from and after this date.

WM. H. TAFT,

THE WHITE HOUSE,
February 5, 1912.

[No. 1,468.]

Non-assembled Examinations.

In the Manual of Examinations for the spring of 1912 announcement is made of the following-named examinations, applications for which may be filed at any time, as competitors are not required to appear at any place for examination:

Animal husbandman, Bureau of Animal Industry, Department of Agriculture.

Chief marine engineer, Coast and Geodetic Survey.

Mate, Coast and Geodetic Survey.

In requesting application blanks or information in regard to any of the above-named examinations the exact title should be given.

JOHN K. BAXTER,
Secretary, Isthmian Civil Service Board.
Culebra, C. Z., February 17 1912.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters and engineers, and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on February 28, 1912. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m. on February 28, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

Obituary.

R. H. Colip, an employe of the Panama Railroad Company at Cristobal, died in Colon Hospital on February 2. He was 51 years of age, born in the state of Indiana, and had been on the Isthmus seven years. He is survived by his wife living at Cristobal.

BASEBALL.

ALL STAR ISTHMIAN V. NEW ORLEANS

GAME AT COLON, FEBRUARY 17, 1912.

All-Star.	AB.	H.	PO.	A.	E.	New Or.	AB.	H.	PO.	A.	E.
Clements,rf	4	0	1	0	0	Manush,lf.	3	0	1	0	0
Lacy,3b...	4	0	0	2	0	Bunting,3b	3	1	0	1	0
Curtis,2b..	2	0	2	3	2	Clancy,2b.	4	1	1	1	0
Brill,1b....	3	0	7	1	3	Callahan,rf	2	0	0	0	0
Smith,ss...	3	0	0	1	0	Cook,1b...	2	0	8	0	0
Buch'an,cf.	3	0	1	1	0	Hickey,cf..	2	1	0	0	0
VanZ'dt,lf.	1	1	2	1	0	Knaupp,ss.	1	0	3	3	0
Markley,c.	2	1	10	2	1	Texter,c ..	4	0	10	2	0
Kellogg p..	3	3	1	2	1	Martina,p.	3	1	1	3	1
Totals...	25	5	24	13	7	Totals....	24	4	24	10	1

All-Star	0	0	1	0	3	0	1	0	—5
New Orleans	0	0	2	2	1	0	0	2	—7

Runs—All-Star: Van Zandt (3), Markley, Kellog; New Orleans: Manush, Callahan, Cook, Hickey, Knaupp, Texter, Martina. Earned runs—All-Stars 3, New Orleans 1. Two-base hits—Kellogg, Markley, Bunting. Three-base hits—Bunting. Home run—Kellogg. Sacrifice hits—Manush, Cook, Hickey, Martina, Brill, Markley. Sacrifice fly—Knaupp. Stolen bases—Callahan (3), Hickey. First base on errors—New Orleans 4. Base on balls—off Martina 4, off Kellogg 3. Struck out—by Martina 9, Kellogg 9. Hit by pitcher—by Kellogg 4, (Callahan 2, Bunting, and Cook). Left on bases—New Orleans 5, All-Star 2. Double plays—Kellogg (unassisted), Markley to Brill. Umpires—Irwin and Johnston. Time of game—2.25. Scorers—Garrett and Meade. Wild pitch—Kellogg 3.

Murray ran for Kellogg in third and seventh inning.

Game called after 2 men out in first half of ninth inning, score reverts back to eighth inning.

GAME AT EMPIRE, FEBRUARY 18, 1912.

All-Star.	AB.	H.	PO.	A.	E.	New Or.	AB.	H.	PO.	A.	E.
VanZ'dt,lf.	4	0	2	1	0	Manush,lf.	3	1	1	0	0
Lacy,3b...	3	1	1	2	1	Bunting,3b	3	1	1	1	1
Curtis,ss...	4	1	3	3	1	Clancy,2b.	4	2	0	2	0
Buch'an,cf.	4	1	2	0	1	Callahan,cf	5	0	0	0	0
Brill,1b....	2	0	14	1	1	Cook,1b...	5	3	12	0	2
Smith,rf...	3	1	0	0	0	Hickey,cf..	5	2	1	0	0
*Murrary,p	1	0	0	0	0	Knaupp,ss.	5	0	4	5	0
VanOt'an,p	0	0	0	2	0	Texter,c...	5	0	8	3	0
Hodnett,c.	2	1	5	1	0	Maples,p..	4	1	0	3	0
Trickey...	1	0	0	0	0						
Russell....	1	0	0	0	0						
Totals...	29	5	27	17	5	Totals....	39	10	27	14	3

All-Star	0	1	0	0	0	0	0	0	0	—1
New Orleans	0	0	0	4	0	1	0	3	1	—9

Runs—All-Star: Buchanan; New Orleans: Manush (2), Bunting, Clancy, Cook (2), Hickey, Knaupp, Maples. Earned runs—New Orleans 3. Two-base hits—Lacy, Cook. Threebase hit—Hickey. Home runs—Clancy and Cook. First base on balls—off Murray 3, Maples 4. Struck out—by Murray 2, Van Ottman 1, Maples 8. Left on bases—New Orleans 8, All-Stars 6. Double play—Knaupp to Cook. First base on errors—New Orleans 3, All-Star 2. Hit by pitcher—by Murray 1 (Manush), by Van Ottman 1 (Manush). Hits—off Murray 6 in 5 innings, off Van Ottman 4 in 4 innings. Stolen bases—Manush (2), Clancy (2). Sacrifice fly—Smith. Time of game—2.15. Umpires—Johnston and Irwin. Scorers—Mead and Garrett. *Trickey batted for Murray in 5th inning. †Russell batted for Brill in 9th inning.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Culebra, C. Z., Sunday, February 25, 1912 at 5.45 p. m.

The next concert will be given at Gatun, C. Z., March 3, at 5.00 p. m.

Lost—In Pedro Miguel Hall, or between the hall and house 132, a pearl and diamond brooch. Finder will receive a liberal reward by returning the same to the District Sanitary Inspector, Pedro Miguel.

PANAMA RAILROAD COMPANY.

PASSENGER TRAIN TIME TABLE No. 11—IN EFFECT FEBRUARY 15, 1912.

SOUTHWARD.										Distance from Colon	STATION	NORTHWARD										
Saturday only.		Sunday only					Daily Except Sunday.					Daily except Sunday			Sunday only.					Monday only.	Saturday only.	Sunday only.
73	71	29	27	25	23	21	7	5	3			2	4	8	20	22	24	26	28	30	72	74
P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.		Leave. Arr.	A. M.	P. M.	P. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	P. M.	A. M.
10.45	6.10	7.10	4.05	1.05	10.05	6.50	4.35	10.25	5.10	0	Colon	9.00	1.20	7.50	9.05	12.20	3.20	6.20	9.20	12.45	9.55	2.25
s10.50	s6.15	s7.15	s4.10	s1.10	s10.10	s6.55	s4.40	s10.30	s5.15	1.57	Mount Hope	s8.55	s 1.15	s7.45	s9.00	s12.15	s3.15	s6.15	s9.15	s12.40	s9.50	s2.20
10.55	6.21	f7.21	4.16	1.16	f10.16	7.01	4.46	10.36	s5.21	4.40	Mindi	s8.49	f 1.09	f7.39	f8.54	12.09	3.09	6.09	9.09	f12.34	9.44	2.14
s11.01	s6.27	s7.27	s4.22	s1.22	s10.22	s7.07	s4.52	s10.42	s5.27	5.95	New Gatun	s8.45	s 1.01	s7.34	s8.49	s12.04	s3.04	s6.04	s9.04	s12.29	s9.39	s2.09
s11.07	s6.33	s7.33	s4.28	s1.28	s10.28	s7.13	s4.58	s10.48	s5.33	6.78	Gatun	s8.41	s12.59	s7.29	s8.44	P. M. s11.59	s2.59	s5.59	s8.59	s12.24	s9.34	s2.04
s11.24	s6.50	s7.50	s4.45	s1.45	s10.45	s7.30	s5.15	s11.05	s5.50	14.50	Monte Lirio	s8.24	s12.42	s7.12	s8.27	s11.42	s2.42	s5.42	s8.42	s12.07	s9.17	s1.47
f11.35	f7.01	f8.01	f 4.56	f1.56	f10.56	f7.41	f5.26	f11.16	f6.01	20.99	Frijoles	f8.13	f12.31	f7.01	f8.16	f11.31	f2.31	f5.31	f8.31	A. M. f11 56	f9.06	f1.36
P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.		Arrive. Leave.	A. M.	P. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.
No. 73 will take schedule of No. 52 from Gamboa Junc. to Gorgona.	No. 71 will take schedule of No. 50 from Gamboa Junc. to Gorgona.	No. 29 will take schedule of No. 48 from Gamboa Junc. to Gorgona.	No. 27 will take schedule of No. 48 from Gamboa Junc. to Gorgona.	No. 25 will take schedule of No. 44 from Gamboa Junc. to Gorgona.	No. 23 will take schedule of No. 42 from Gamboa Junc. to Gorgona.	No.21 will take schedule of No. 40 from Gamboa Junc. to Gorgona.	No. 7 will take schedule of No. 38 from Gamboa Junc. to Gorgona.	No. 5 will take schedule of No. 36 from Gamboa Junc. to Gorgona.	No. 3 will take schedule of No. 34 from Gambna Junc. to Gorgona.			No. 2 will take schedule of No. 33 from Gorgona to Gamboa Junction.	No. 4 will take schedule of No..35 from Gorgona to Gamboa Junction.	No. 8 will take schedule of No. 37 from Gorgona to Gamboa Junction.	No. 20 will take schedule of No. 39 from Gorgona ro Gamboa Junction.	No. 22 will take schedule of No. 41 from Gorgona to Gamboa Junction.	No. 24 will take schedule of No. 43 from Gorgona to Gamboa Junction.	No. 26 will take schedule of No. 45 from Gorgona to Gamboa Junction.	No. 28 will take schedule of No. 47 from Gorgona to Gamboa Junction.	No. 30 will take schedule of No. 49 from Gorgona to Gamboa Junction.	No. 72 will take schedule of No. 51 from Gorgona to Gamboa Junction.	No. 74 will take schedule of No. 53 from Gorgona to Gamboa Junction.
A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.		Leave. Arr.	A. M.	A. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.
s12.10	s7.35	s8.35	s5.30	s2.30	s11.30	s8.15	s6.00	s11.50	s6.35	33.55	Gorgona	s7.38	s11.56	s6.26	s7.41	s10.56	s1.56	s4.56	s7.56	s11.21	s8.31	s 1.01
s12.15	s7.40	s8.40	s5.35	s2.35	s11.35	s8.20	s6.05	s11.55	s6.40	32.14	Matachin	s7.33	s11.51	s6.21	s7.36	s10.51	s1.51	s4.51	s7.51	s11.16	s8.25	s12.55
s12.20	s7.45	s8.45	s5.40	s2.40	s11.40	s8.25	s6.10	s12.00	s6.45	33.07	Bas Obispo	s7.29	s11.47	s6.17	s7.32	s10.47	s1.47	s4.47	s7.47	s11.12	s8.21	s12.51
s12.27	s7.52	s8.52	s5.47	s2.47	s11.47	s8.32	s6.17	P. M. s12.07	s6.52	34.68	Las Cascadas	s7.23	s11.41	s6.11	s7.26	s10.41	s1.41	s4.41	s7.41	s11.06	s8.14	s12.44
s12.34	s7.59	s8.59	s5.54	s2.54	s11.54	s8.39	s6.24	s12.14	s6.59	36.97	Empire	s7.18	s11.36	s6.06	s7.20	s10.35	s1.35	s4.35	s7.35	s11.00	s8.09	s12.39
s12.39	s8.04	s9.04	s5.59	s2.59	s11.59	s8.44	s6.29	s12.19	s7.05	37.96	Culebra	s7.12	s11.30	s6.00	s7.14	s10.29	s1.29	s4.29	s7.29	s10.54	s8.03	s12.34
s12.47	s8.12	f9.12	f6.07	f3.07	P. M. f12.07	f8.52	6.37	12.27	7.14	41.83	Paraiso Jct.	6 59	11.17	5.47	f7.04	f10.19	f1.19	f4.19	f7.19	f10.44	f7.52	s12.23
s12.49	s8.14	s9.14	s6.09	s3.09	s12.09	s8.54	s6.39	s12.29	s7.16	42.21	Pedro Miguel	s6.57	s11.15	s5.45	s7.00	s10.15	s1.15	s4.15	s7.15	s10.40	s7.50	s12.21
s12.54	s8.19	s9.19	s6.14	s3.14	s12.14	s8.59	s6.44	s12.34	s7.21	43.72	Miraflores	s6.51	s11.09	s5.39	s6.54	s10.09	s1.09	s4.09	s7.09	s10.34	s7.44	s12.16
s1.01	s8.26	s9.26	s6.21	s3.21	s12.21	s9.06	s6.51	s12.41	s7.27	46.22	Corozal	s6.44	s11.03	s5.33	s6.48	s10.03	s1.03	s4.03	s7.03	s10.28	s7.38	s12.09
f1.03	f8.28	f9.28	f6.23	f3.23	f12.23	f9.08	f6.53	f12.43	f7.29	46.90	Diablo	6.41	f11.01	f5.31	f6.46	f10.01	f1.01	f4.01	f7.01	f10.26	f7.36	f12.07
1.10	8.35	9.35	6.30	3.30	12.30	9.15	7.00	12.50	7.35	49.13	Panama	6.35	10.55	5.25	6.40	9.55	12.55	3.55	6.55	10.20	7.30	12.01
A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	P. M.	P. M.	A. M.		Arrive Leave.	A. M.	A. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.
73	71	29	27	25	23	21	7	5	3		s, Stop. f, Flag	2	4	8	20	22	24	26	28	30	72	74

Sunday only.	Saturday only.	Sunday only.	Sunday only.					Daily except Sunday				Daily except Sunday			Sunday only.					Saturday only.	Sunday only.	
53	51	49	47	45	43	41	39	37	35	33		34	36	38	40	42	44	46	48	50	52	
A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.	Leave. Arr.	A. M.	A. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	
1.03	8.33	11.23	7.58	4.58	1.58	10.58	7.43	6.28	11.58	7.40	Gorgona	6.33	11.48	5.58	8.13	11.28	2.28	5.28	8.33	7.33	12.08	......
1.08	8.38	11.28	8.03	5.03	2.03	11.03	7.48	6.33	P. M. 12.03	7.45	Matachin	6.28	11.43	5.53	8.08	11.23	2.23	5.23	8.28	7.28	12.03	......
A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	P. M.	A. M.	Arrive. Leave.	A. M.	A. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	

BALBOA TRAIN.

SOUTHWARD.										STATIONS.	NORTHWARD.										
Sundays only.	Work-nights only.	Daily except Sund'y	DAILY.								DAILY.									Work-nights only.	Sundays only.
69	67	65	63	61	59	57*	55	53	51		48	50	52	54	56	58	60	62	64	66	68
P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	A. M.	A. M.	Leave Arrive	A M	A. M.	A. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.
9.30	10.50	7.30	5.35	1.50	12.30	10.40	7.45	6.35	5.35	Panama	5.25	6.20	7.40	10 20	11.25	1.25	5.20	6.25	8.45	11.30	10.00
9.45	11.00	7.45	5.50	2.00	12.45	10.50	8.00	6.50	5.50	Balboa	5.10	6.05	7.25	10.10	11.10	1.15	5.05	6.10	8.30	11.15	9.50
										Arrlve Leave											

*Note.—Train No. 7 to follow main line train No. 4 out of Panama.

OFFICIAL CIRCULARS.

Care of Locomotive Tools and Oiling Equipment.

CULEBRA, C. Z., February 6, 1912.

CIRCULAR 411-C. (Superseding Circulars 411, 411-A, and 411-B.)

1. My attention has been invited to the frequent loss of locomotive tools and oiling equipment, resulting in most cases, from the failure of engineers to see that tools and oil boxes are properly locked before they leave their engines.

2. Boxes and chains with locks for securing tools, etc., being provided on each locomotive, the loss of such equipment from this cause is inexcusable, and any such loss will, in the future, subject the engineer responsible to discipline.

3. Locomotive engineers will be expected to see that their engines are provided with a sufficient number of locks and boxes to insure the proper safeguarding of this equipment, and in any case in which locks or boxes have been broken and equipment removed, they will be expected to report the same promptly to the foreman of the engine house where engine is tied up when not working, who shall, in turn, report the facts to the yardmaster.

4. Hostlers will make a personal inspection of the firing tools and boxes containing locomotive tools and oil cans on each engine assigned to them as early as practicable after the arrival of the engine at the enginehouse, and will report to the foreman the number of each engine on which firing tools and boxes containing tools and oil cans are unlocked.

5. Before an engine is released from an engine house for service it will be inspected by a hostler, who will personally see that it is provided with an adequate supply of coal or oil, water, and sand; that the fire is clean and in proper condition; that steam is raised to the required pressure; and that the authorized tools and oil cans are on the engine, and that all firing tools and boxes containing locomotive tools are locked.

6. When any equipment is delivered to any shop for repairs, the employe delivering the equipment will turn over the tools thereon to the shop officials and obtain a receipt for them. When any equipment is sent out of the shop, the tools received with it will be issued to the employe taking same, and the latter will receipt for them.

7. Difficulty in properly fixing property accountability for locomotive equipment has been encountered on account of locomotive engineers leaving personal tool equipment on locomotives, which becomes checked with I. C. C. equipment. In order to keep property records accurately, locomotive engineers will in future confine their personal tool equipment to such tools as are not furnished by the Isthmian Canal Commission. Any duplication by locomotive engineers of standard tools furnished by the Isthmian Canal Commission or the Panama Railroad Company is prohibited.

8. In order to assist in the identification of locomotive tools, etc., all such equipment will be numbered by the Mechanical Division with the number of the locomotive to which the same belongs. This numbering will be performed at the different engine houses upon the delivery of the equipment there by the different divisions concerned. When engines are transferred from one division to another, the tools will be transferred with the engine to which they belong.

H. F. HODGES,
Acting Chairman, Isthmian Canal Commission.
Second Vice-President, Panama Railroad Company.

Personal Calls on Telephone Lines.

CULEBRA, C. Z., February 13, 1912.

CIRCULAR NO. 433:

A recent test has indicated that the telephone lines are occupied each day a total of more than three hours by personal calls. It is expected that employes will not use the lines during the usual hours of business for other than official purposes except in case of emergency.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Washington's Birthday.

CULEBRA, C. Z., February 14, 1912.

CIRCULAR NO. 434:

Washington's Birthday, Thursday, February 22, 1912, will be observed as a holiday in the Canal Zone, and, as far as practicable, all public business will be suspended on that day.

H. F. HODGES, *Acting Chairman.*

Compensation for Time of Witnesses Before a Court Martial.

CULEBRA, C. Z., February 15, 1912.

CIRCULAR NO. 276-C:

Employes of the Isthmian Canal Commission or of the Panama Railroad Company who are duly summoned to testify before a court-martial in the Canal Zone will be compensated for time lost in the same manner as employes selected for jury duty or summoned as witnesses in criminal cases. Certificates showing the time the employe is actually in attendance should be issued by the Judge Advocate or Trial Officer of the Court. In other respects, the same procedure will be followed as is prescribed in Circular No. 276.

H. F. HODGES,
Acting Chairman, Isthmian Canal Commission.
Second Vice-President, Panama Railroad Company.

Station Names on 120-Trip Tickets.

CULEBRA, C. Z., February 16, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

In view of the fact that the old line station numbers printed on I. C. C. 120-trip tickets do not agree with the new station numbers on the relocated line, employes using this form of transportation will, in the future, indicate the stations between which it is desired to travel by name instead of number.

By direction of the Acting Chairman.

Respectfully,
C. A. MCILVAINE, *Chief Clerk.*

Stages of the Chagres.

Macimum heights of the Chagres River for the week ending midnight, Saturday, February 17, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Feb. 11...	125.2	91.6	44.3	13.8	13.8
Mon., Feb. 12..	125.2	91.6	44.2	13.9	13.9
Tues., Feb. 13..	125.2	91.5	44.2	14.1	14.1
Wed., Feb. 14..	125.2	91.6	44.2	14.3	14.3
Thurs., Feb. 15.	125.2	91.5	44.2	14.5	14.5
Fri., Feb. 16...	125.2	91.6	44.2	14.6	14.6
Sat., Feb. 10...	125.2	91.5	44.1	14.8	14.8
Height of low water to the nearest foot...	125.0	91.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending February 28, 1912 (75th meridian time):

DATE.	Low	High	Low	High
	A.M.	A.M.	P.M.	P.M.
February 22...	12.15	6.10	12.27	6.30
February 23...	12.51	6.47	1.03	7.07
February 24...	1.30	7.25	1.43	7.48
February 25...	2.16	8.12	2.28	8.35
February 26...	3.10	9.06	3.26	9.33
February 27...	4.14	10.14	4.41	10.48
February 28...	5.27	11.37	6.04	......

Rainfall from February 1 to 17, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Stion—	*Ins.*		*Ins.*
Ancon...	.06	15	.08
Balboa...	.14	15	.18
*Miraflores...	.30	15	.34
Pedro Miguel...	.19	15	.22
Rio Grande...	.14	15	.31
Central Section—			
Culebra...	.21	15	.32
*Camacho...	.50	15	.63
Empire...	.28	15	.31
Gamboa...	.96	15	1.10
*Juan Mina...	.51	15	.84
Alhajuela...	.14	15	.30
*El Vigia...	.30	15	.61
*Gorgona...	.24	15	.35
*Monte Lirio...	.57	16	3.01
Atlantic Section—			
Gatun...	.72	15	2.18
*Brazos Brook...	.47	15	2.23
Colon...	.51	7	1.64
Porto Bello...	.57	9	†1.53

*Standard rain gauge—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5 p. m., February 16.

Married.

CONN-MOYER—On February 10, at the home of the bride's parents, Empire, Miss Maud Moyer, and Mr. J. E. Conn, the Rev. A. A.Nellis officiating. Canal Zone residence, Empire.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Colon...	P. R. R..	Friday...	Feb.	16
Advance...	P. R. R..	Friday...	Feb.	23
Panama...	P. R. R..	Thursday...	Feb.	29
Allianca...	P. R. R..	Wednesday..	Mar.	6
Colon...	P. R. R..	Wednesday..	Mar.	13
Advance...	P. R. R..	Tuesday...	Mar.	19
Panama...	P. R. R..	Tuesday...	Mar.	26
Allianca...	P. R. R..	Monday...	April	1
Colon...	P. R. R..	Monday...	April	8
Advance...	P. R. R..	Saturday...	April	13
Panama...	P. R. R..	Saturday...	April	20
Allianca...	P. R. R..	Friday...	April	26

CRISTOBAL TO NEW YORK.

Ancon...	P. R. R..	Wednesday..	Feb.	21
Allianca...	P. R. R..	Thursday...	Feb.	22
Colon...	P. R. R..	Thursday...	Feb.	29
Advance...	P. R. R..	Wednesday..	Mar.	6
Panama...	P. R. R..	Wednesday..	Mar.	13
Allianca...	P. R. R..	Tuesday...	Mar.	19
Colon...	P. R. R..	Tuesday...	Mar.	26
Advance...	P. R. R..	Monday...	April	1
Panama...	P. R. R..	Sunday...	April	7
Allianca...	P. R. R..	Sunday...	April	14
Colon...	P. R. R..	Saturday...	April	20
Advance...	P. R. R..	Friday...	April	26

NEW YORK TO COLON.

Almirante...	U. F. C..	Wednesday..	Feb.	14
Carrillo...	U. F. C..	Saturday...	Feb.	17
Oruba...	R. M...	Saturday...	Feb.	17
Prinz Sigismund...	H.-A...	Saturday...	Feb.	17
Santa Marta...	U. F. C..	Wednesday..	Feb.	21
Prinz August Wilhelm.	H.-A...	Saturday...	Feb.	24
Turrialba...	U. F. C..	Saturday...	Feb.	24
Metapan...	U. F. C..	Wednesday..	Feb.	28
Tivives...	U. F. C..	Saturday...	Mar.	2
Sibiria...	H.-A...	Saturday...	Mar.	2
Orotava...	R. M...	Saturday...	Mar.	2
Tivives...	U. F. C..	Saturday...	Mar.	2
Zacapa...	U. F. C..	Wednesday..	Mar.	6
Prinz Joachim...	H.-A...	Saturday...	Mar.	9
Sixaola...	U. F. C..	Saturday...	Mar.	9
Almirante...	U. F. C..	Wednesday..	Mar.	13
Prinz Sigismund...	H.-A...	Saturday...	Mar.	16
Carrillo...	U. F. C..	Saturday...	Mar.	16
Magdalena...	R. M...	Saturday...	Mar.	16
Santa Marta...	U. F. C..	Wednesday..	Mar.	20
Prinz August Wilhelm.	H.-A...	Saturday...	Mar.	23
Turrialba...	U. F. C..	Saturday...	Mar.	23
Prinz Eitel Friedrich..	H.-A...	Saturday...	Mar.	30

COLON TO NEW YORK.

Zacapa...	U. F. C..	Thursday...	Feb.	22
Prinz Eitel Friedrich..	H.-A...	Tuesday...	Feb.	27
Sixaola...	U. F. C..	Tuesday...	Feb.	27
Almirante...	U. F. C..	Thursday...	Feb.	29
Prinz Sigismund...	H.-A...	Monday...	Mar.	4
Magdalena...	R. M...	Tuesday...	Mar.	5
Santa Marta...	U. F. C..	Thursday...	Mar.	7
Prinz August Wilhelm.	H.-A...	Tuesday...	Mar	12
Turrialba...	U. F. C..	Tuesday...	Mar.	12
Metapan...	U. F. C..	Thursday...	Mar.	14
Tivives...	U. F. C..	Tuesday...	Mar.	19
Zacapa...	U. F. C..	Thursday...	Mar.	21
Prinz Joachim...	H.-A...	Tuesday...	Mar.	26

NEW ORLEANS TO COLON.

Heredia...	U. F. C..	Saturday...	Feb.	17
Atenas...	U. F. C..	Wednesday..	Feb.	21
Parismina...	U. F. C..	Saturday...	Feb.	24
Cartago...	U. F. C..	Wednesday..	Feb.	28
Abangarez...	U. F. C..	Saturday...	Mar.	2
Heredia...	U. F. C..	Wednesday..	Mar.	6
Atenas...	U. F. C..	Saturday...	Mar.	9

COLON TO NEW ORLEANS

Cartago...	U. F. C..	Thursday...	Feb.	22
Abangarez...	U. F. C..	Thursday...	Feb.	22
Heredia...	U. F. C..	Thursday...	Feb.	29
Atenas...	U. F. C..	Thursday...	Feb.	29
Parismina...	U. F. C..	Thursday...	Mar.	7
Cartago...	U. F. C..	Thursday...	Mar.	7

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a.m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 5 p. m.; ships for New York via Kingston on Tuesdays at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, FEBRUARY 28, 1912. No. 27.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Acting Chairman's Report.

The report of the Acting Chairman of the Isthmian Canal Commission for the month of January is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Completed Sections of Canal Channel.

A steamshovel is engaged in excavating part of the dike which separates the channel of the Chagres River from Culebra Cut at Gamboa and is the means by which the trains of the Panama railroad cross from the old main line at Matachin to the relocated line. About 30,000 cubic yards are to be taken out now, though enough of the dike will be left to afford protection from the Chagres and support for the railway track. After May 1, when the excavations at San Pablo, Tabernilla, and Bohio will have been completed, this dike, containing about 70,000 cubic yards of rock and earth, will be the only obstruction in the otherwise completed channel from Gatun Locks to Las Cascadas (Mile 7.8 to Mile 33.3), a distance of 25½ miles.

Commercial Freight by Panama Route.

Under date of February 10 the Secretary of War issued the following statement regarding commercial business over the Panama railroad:

> After a full hearing of all parties with respect to the proposed raising of Panama railroad rates, I have come to the conclusion that the volume of commercial traffic which is now carried over the Panama railroad must be very materially cut down so as not to interfere with Colonel Goethals' work of construction. On the fifteenth of February the present double track railroad of the Company must be abandoned owing to the progress of the construction work in the Gatun Lake section; and thereafter all of the traffic, both that involved in construction and the ordinary commercial traffic, must be carried over the new single track railroad. This means that the capacity of the railroad will be cut down at least one third. During the past year the volume of commercial freight over the railroad has doubled, and this constantly increasing volume has very much interfered with the work of constructing the Canal. It is therefore apparent that the operation of this commercial route via the Panama Canal is now interfering with, and unless checked will still more interfere with and delay the completion of the Canal. Under these circumstances I have no hesitation in deciding that the rights of present commerce, both coastwise and foreign, must yield to the rights of construction.
>
> On the other hand I find after a full hearing that the proposed increase of rates will not effectively check this increasing volume of commercial business. Even at the proposed rates, all of the freight accomodations of the company's steamships have been booked for a month ahead. It is therefore evident that other steps must be taken. Furthermore, it has been urged before me that to increase the present rates might lead to the raising of the rates over the transcontinental railroads which operate in competition with the present Panama route. This would be highly undesirable.
>
> I also find that while the steamers of the Panama Railroad Company have been operated at a loss during this year, the Company as a whole is still making a fair profit on this commercial business. Under all the circumstances it seems best to me that the freight rates should remain the same for the present, but I have directed the officers of the Company to materially cut down the volume of commercial freight which they accept for shipment at the terminals of the Company, to such an extent as will insure in the future that the work of Colonel Goethals in the Canal shall not be interfered with. I am aware that this will necessarily cause inconvenience to shippers who have become accustomed to using this line. It is, however, a temporary inconvenience which is made necessary by this great national work of completing the Panama Canal. I feel sure that they with all the rest of us, will bear cheerfully this temporary inconvenience as their sacrifice towards the completion of this great work.

Foundation for Miraflores Approach Wall.

When work was begun on sinking the 250 concrete caissons on which the cellular upper approach wall at Miraflores Locks is to rest some excavation had still to be done for the upper portion of the center wall and the floors for the two chambers. The first caisson was accordingly sunk near the middle of the site of the approach wall, in the swampy area north of the lock site, and later operations were carried from that point toward the outer end. In the meantime the excavation at the end of the chambers has been completed, and last week operations were begun for the placing of the cassions in the section next the center wall. The site of the approach wall is crossed by the railway track that leads to Miraflores Dam, the cement shed and the stock trestle supplying the berm cranes on the west side of the locks. New connections are now under way and these tracks will shortly be removed so that the construction of the approach wall can be continued.

Chapels at Hospital Morgues.

Plans have been approved for two chapels to be attached to the morgues at Ancon and Colon Hospitals for the holding of funeral services over the remains of persons who die in the hospitals. Each building will be 30 by 20 feet, and will contain a chancel, space for the body in front of the chancel, and seats for a limited number of persons.

Inspection of Scales.

All of the scales in public use on the Isthmus by the Commission and the Panama Railroad Company are inspected at least once every three months. For this purpose the Mechanical Division maintains a service for its own departments and for the Panama railroad and the Quartermaster's Department; and the Subsistence Department has a separate service for the hotels and commissary stores. The Mechanical Division has four scales, in intermittent service; the Panama railroad has 44, including a railway track scale at Colon; and the Quartermaster's Department, with which are listed the scales in use at its storehouses, in the Division of Posts and Revenues, at the hospitals and dispensaries and in the Commission clubhouses, has in all 164 scales. In the Subsistence Department, in addition to the 200 scales in use at the 14 hotels and 18 commissary stores and branches, there are 37 cash registers which are kept in order by the scale-inspection service.

Each service requires the constant employment of a skilled mechanic and a helper. They convey from point to point a kit of tools and lubricants for minor adjustments, and a set of weights of such sizes that a scale may be tested for measurements anywhere between 1 ounce and 575 pounds. Minor repairs are made by the inspector, but if he finds a scale in bad order he recommends that it be sent to Gorgona Shops, where the repairs are made and the scale is painted and tested before it is returned. All of the heavy scales in Commission service are painted uniformly, with blue platforms and uprights and trimmed on the sides with black. Each scale is numbered with a brass plate and after an inspection a report on its condition is made to the department to which it belongs and a duplicate is sent to the office of the inspector and recorded.

The regular system of inspection of scales of the Panama railroad was begun on July 1, 1911; scales belonging to the Quartermasters Department have been inspected since September 1, 1911. Minor adjustments are almost continuously necessary; and when the service was inaugurated many of the scales were found to be considerably out of order. In one of the dispensaries the pharmacist reported that the druggists' balance was unsatisfactory; the inspector found that the presence of a nest of ants within the scale was the cause of its variance. Many others were severely corroded, clogged with dust or in need of lubrication. On each visit the inspector carefully oils the knife edges of scales, to lubricate and preserve them from further deterioration, so that they are kept in excellent condition.

The Subsistence Department has had a regular scale inspection since February, 1911. It has a set of metric weights certified to by the German *Pruefungs Komision*, and a set of pound and ounce weights certified to by the Bureau of Standards at Washington. Also a set of measures of capacity from five gallons down, with a standard half-bushel and a standard cubic foot, all certified to by the Bureau of Standards. It has a working set

NOTES OF PROGRESS.

(Continued.)

of galvanized iron weights up to fifty pounds, which are used at the cold storage plant and tested every day. The controlling scales in use in the cold storage department are galvanized steel agate bearing scales, made by Troemner of Philadelphia, and weigh up to 200 pounds with an error of but five grains. Scales in maufacturing plants and cold storage plant, Commissary Department, are tested daily.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 81 per cent completed, 184,068 cubic yards, out of a total of 225,000, having been placed at the close of work on February 24. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked	No. Mixers.
February 19	416	8.00	1
February 20	424	16.00	2
February 21	440	16.00	2
February 22. (Holiday)	....	....	....
February 23	284	16.00	2
February 24	402	16.00	2
Total	1,966	72.00	1.8
Previously reported	182,102		
Grand total	184,068		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending February 24, follows:

DATE.	Hours worked.	Cubic Yards.
February 19	4.12	2,070
February 20	3.10	1,535
February 21	4.15	2,040
February 22. . (Holiday)	....	....
February 23	3.10	1,560
February 24	3.30	1,852
Total	18.17	9,057

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending February 24, follows:

DATE.	Hours worked.	Cubic Yards.
February 19	7.10	2,855
February 20	6.35	2,509
February 21	2.35	1,336
February 22. . (Holiday)	....	....
February 23	4.50	1,903
February 24	6.15	2,229
Total	27.25	10,832

Two Killed in Dynamite Explosion.

Edwin McClary and Hubert Williams, negro laborers, were killed in Culebra Cut on the morning of February 23 in a dynamite explosion. They had been sent to get a piece of pipe through which to load dynamite, and finding one that had explosive in the end of it, attempted to dislodge this by pounding the piece of pipe on the rail. An explosion resulted, in which both men were killed. They had worked on dynamite gangs several years and were familiar with the danger they incurred in handling the explosive.

Postal Business and Tax Collections.

Money orders to the amount of $404,891.70 were issued in the Canal Zone post offices during the month of January, of which $302,635.93 were payable in the United States, $101,404.02 in the Canal Zone, and the balance in Costa Rica and Martinique. The number of orders issued was 18,483 and the average value was $21.96. The Cristobal office issued orders to the amount of $63,398.38, the largest of any office. Gatun, $54,860.65; Gorgona, $43,321.61; Ancon, $41,906.15. Postal sales amounted to $7,202.91, of which $4,321.75 was net. Tax collections of various classes amounted to $6,704.69.

Obituary.

Howard Ferguson died at Ancon Hospital on February 17, after 8 days' illness. He had resided at East Balboa about two weeks, and was employed by the Quartermaster's Department.

CONCRETE WORK IN THE LOCKS.

Over 79 per cent of the concrete for the locks is in place, the amount at the close of work on February 24 being 3,331,921½ cubic yards, out of a total of approximately 4,199,400. A total of 23,807 cubic yards of concrete was laid in the locks during the week ending February 24.

GATUN LOCKS.

Over 91 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on February 24 being 1,820,845½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending February 24, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
February 19	966	15.44	4	118	1.40	1	....	1,137
February 20	1,104	17.46	6	....	....	......	....	1,169
February 21	1,178	17.02	4	170	2.40	1	....	1,401
February 22. . (Holiday)	....	....	......	....	....	......	....	....
February 23	1,232	19.11	5	114	1.40	1	....	1,396
February 24	964	16.06	5	8	.10	1	....	1,032
*Portable mixers	....	....	......	281	....	......	....	....
Total	5,444	85.49	4.8	691	6.10	1	....	6,135
Previously reported	....	....	......	....	....	......	....	1,814,710½
Grand total	....	....	......	....	....	......	....	1,820,845½

*The 281 yards shown for the portable mixers are reinforced concrete and were placed on the following dates: February 19th, 53; February 20th, 65; February 21st, 53; February 23rd, 50; February 24th, 60.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 97 per cent completed, 816,611 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on February 24. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
February 19	274	8.00	2	215	21.50	4	....	489
February 20	434	13.00	2	352	35.50	5	....	786
February 21	250	7.50	2	164	20.00	3	....	414
February 22 (Holiday)	....	....	......	....	....	......	....	....
February 23	146	4.50	2	313	33.50	5	....	459
February 24	214	6.50	2	264	24.50	5	....	478
Total	1,318	39.50	2	1,308	135.00	4.4	....	2,626
Previously reported	....	....	......	....	....	......	4,423	813,985
Grand total	....	....	......	....	....	......	4,423	816,611

MIRAFLORES LOCKS.

Over 50 per cent of the concrete for the system of two twin locks at Miraflores was in place on February 24, the total amount on that date being 694,465 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Feb. 19	2,486	64.17	8	482	8.08	2	359	25.00	4	....	3,327
Feb. 20	1,924	55.17	8	502	8.17	2	498	32.50	5	....	2,924
Feb. 21	1,678	42.50	8	496	8.00	2	586	43.50	7	....	2,760
Feb. 22	....	....	......	....	....	......	....	....	......	....	....
Feb. 23	1,946	50.83	8	590	9.50	2	576	43.17	8	....	3,112
Feb. 24	1,850	56.00	8	594	9.67	2	479	35.00	6	....	2,923
Total	9,884	268.67	8	2,664	43.42	2	2,498	181.17	6	....	15,046
Previously reported	....	....	......	....	....	......	....	....	......	3,693	679,419
Grand total	....	....	......	....	....	......	....	....	......	3,693	694,465

RED CROSS FINANCES.

Statement for January—Sale of Stamps.

The financial statement of the Canal Zone Chapter, American National Red Cross, for the month of January, follows:

RECEIPTS.

January 1.	On hand	$2,197.48	
January 13.	Received from Mr. A. B. Dickson, account of Christmas seals	156.38	
January 18.	November interest credited at bank	3.27	
January 31.	Net proceeds of reception, January 13.	896.00	
January 31.	Dues	2.00	
	Total		$3,255.13

DISBURSEMENTS.

January 4.	Relief of destitute American, Cristobal.	$25.00	
January 8.	Relief of destitute Americans, Ancon	30.00	
January 10.	Deportation of Zone prisoner to Spain	25.00	
January 10.	Relief of family at Colon, account of fire	25.00	
January 13.	Isthmian Canal Commission, printing	2.67	
January 16.	Expense of musicians for reception, Jan. 13	6.00	
January 19.	Hotel Metropole for board of stranded American lady	34.10	
January 19.	Relief of destitute woman at Empire	5.00	
January 23.	Relief of ex-employe suffering from tuberculosis	25.10	
	Total		$177.87
January 31.	Balance on hand		$3,077.26

JOHN L. PHILLIPS, *Treasurer.*

Final report on sale of Red Cross Seals, season December, 1911–January, 1912, follows:

Total seals received for sale	50,000		$500
Total seals sold	43,471	$434.71	
Seals unsold and destroyed as per instructions	6,529	65.29	
Donated		1.00	
Total			$501

As per the terms of agreement, 12½ per cent of the total sales, $54.46, was forwarded to Charles L. Magee, Secretary of the American National Red Cross, State, War and Navy Building, Washington, D. C., and the balance, $381.25, retained in the general Red Cross funds on the Isthmus as a separate fund for the purpose of aiding tuberculosis patients, to be disbursed on recommendation of Col. W. C. Gorgas, Chief Sanitary Officer.

The sale of seals far surpassed that of last year. The largest number was disposed of by Mrs. C. A. Devol, Chairman of the Women's Auxiliary, under whose supervision 18,263 were sold by the various women's organizations. The Boy Scouts throughout the Zone and the Anti-Cigarette League under the direction of Mrs. Hackenberg of Gorgona accomplished splendid work in this connection. Miss Dorothea Hill, daughter of E. H. Hill of Colon, sold 2,000 seals.

PERSONAL.

Col. Geo. W. Goethals, who went to the States on January 28 on official business, has been directed to go to Europe to investigate matters relating to canal terminals.

The Hon. Philander C. Knox, Secretary of State, accompanied by Mrs. Knox and their son and daughter-in-law, arrived at Colon on February 27 on the *U. S. S. Washington.* The *U. S. S. Maryland* is waiting in Panama roads to take them to various Central American ports.

Mr. Isham Randolph, who was a member of the International Board of Consulting Engineers on the Panama Canal, and of the special board that investigated the construction of Gatun Dam in February, 1909, accompanied by his son, is on the Isthmus inspecting the Canal work.

CANAL WORK IN JANUARY.

Monthly Report of the Acting Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., February 15, 1912.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of January, 1912.

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	34,495	1,443,401	168,984	1,646,880
Work excavation, wet	Cubic yards	520,228	991	412,118	933,337
Total work excavation	Cubic yards	554,723	1,444,392	581,102	2,580,217
Plant excavation, dry	Cubic yards	....	8,443	....	8,448
Plant excavation, wet	Cubic yards	52,779	....	....	52,779
Total Canal Excavation	Cubic yards	607,502	1,452,840	581,102	2,641,444
Material placed in dams	Cubic yards	413,166	....	62,964	476,130
Concrete placed in locks and dams	Cubic yards	43,888	....	63,493	107,381
Explosives used	Tons (Gross)	69.31	252.03	42.91	364.25
Rock drilled	Feet	58,597	482,731	80,403	621,731
Tracks removed	Miles	....	19.56	....	19.56
New tracks laid	Miles	2.41	25.47	....	27.88
Rock crushed	Cubic yards	46,858	....	59,043	105,901
Cement used	Barrels	48,394	110	67,088	115,592
New roads built	Miles	0.39	....	....	0.39
Water mains laid	Feet	15,825	15,228	13,053	44,106
Sewers laid	Feet	3,810	159	1,355	5,324
Open drains and ditches dug	Feet	30,496	1,874	5,270	37,640
Average daily force	....	6,756	8,290	5,780	20,826
Average rainfall	Inches	0.60	0.17	....	0.22

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the Division Engineers, the inspection being cared for by this subdivision. Work was continued on the grinding of fixed irons and preparing valve chambers for the installation of the valves, which work is being done under supervision of this office. This subdivision is also charged with general inspection of the masonry work of all the locks.

LOCK GATES AND PROTECTIVE DEVICES.

Shop Work in the United States—Up to January 20, a total of 45,427 tons of structural steel had been accepted at the rolling mills, or about 90 per cent of the total, of which 1,587 tons were accepted between December 20 and January 20; and a total of 25,663 tons of riveted structural material was shipped from the Rankin shops, or a little over 50 per cent of the total contract weight. Of this last item, 940 tons were shipped between December 20 and January 20. About 3,000 tons of additional structural steel have been manufactured and inspected, but cannot be painted on account of unfavorable weather and are held in the yard at Rankin. It should be noted that the above total includes the parts lost on the steamship *Moldegaard*, and ascertained to be 1,419 tons in all. This lost material has been re-ordered and in part received and fabricated at the shops. The following are details of material shipped to January 20:

Gatun Locks—Upper guard gates, 4 leaves, 54 feet 8 inches high, Nos. 37 to 40, inclusive; all material shipped. Upper and middle gates, upper lock, 8 leaves, 77 feet high, Nos. 29 to 36, inclusive; all material shipped. Safety and lower gates, upper lock, 8 leaves, 77 feet high, Nos. 21 to 28, inclusive; all completed and nearly all shipped. Middle and lower gates, middle lock, 8 leaves, 77 feet 10 inches high, Nos. 13 to 20, inclusive; about 17 per cent of the total has been shipped, none of it in the last month. Middle gates, lower lock, 4 leaves, 77 feet high, Nos. 9 to 12, inclusive; 45 per cent completed; none shipped. Lower guard gates, 4 leaves, 47 feet 4 inches high, Nos. 1 to 4, inclusive; 20 per cent completed, none shipped.

Pedro Miguel Lock—Upper guard gates, 4 leaves, 54 feet 8 inches high, Nos. 50 to 53, inclusive; all material shipped. Upper, safety, lower, and middle gates, 16 leaves, 79 feet high, Nos. 54 to 69, inclusive, and lower guard gates, 4 leaves, 47 feet 4 inches high, Nos. 70 to 73, inclusive; practically all manufactured and shipped.

Miraflores Locks—Practically no material has been manufactured.

The manufacture of castings, handrailing and piping has proceeded satisfactorily.

LOCK GATE ERECTION.

Gatun—Upper guard gates, 54 feet 8 inches high, leaves Nos. 37 to 40, inclusive, Riveting has proceeded on these leaves and is nearly completed. The grinding of end plates to fit reaction castings was completed on the quoin posts of leaves Nos. 37 and 38. The assembling of reaction castings on these posts began January 30. The piping has also been partly installed.

Upper gates, upper lock, 77 feet high, leaves Nos. 33 to 36, inclusive: The skeleton is assembled and practically riveted. The sheathing is in place in all leaves, but is not fully adjusted and bolted. No reaming or riveting on same has been done on leaves Nos. 33 and 34, while on leaves Nos. 35 and 35 four panels have been reamed on both faces and one panel riveted.

Middle gates, upper lock, 77 feet high, leaves Nos. 29 to 32, inclusive: The erection bridges were moved to this point and the bottom girders placed in the lock on January 27. The second girder was placed in leaves Nos. 31 and 32.

Pedro Miguel—Upper guard gates, 54 feet 8 inches high, Nos. 50 to 53, inclusive: The material, with the exception of five plates not yet located, and some smaller parts, was completely put in place and the moving of the erection bridges began January 23. The interior skeletons are riveted up. The riveting of sheathing was practically completed on leaf No. 50. The reaming was two-thirds completed and riveting of sheathing about 20 per cent completed on leaf No. 51. On leaf No.

52, five panels upstream sheathing was riveted, but no part of the downstream sheathing. About nine panels were riveted up on leaf No. 53.

Upper gates, 79 feet high, Nos. 54 to 57, inclusive: The bottom girders were placed in position on January 29 and 30.

Safety gates, 79 feet high, leaves Nos. 62 to 65, inclusive: The skeleton was erected 8 panels high in leaf No. 62, 12 panels high in leaf No. 63, and 13 panels high in leaf No. 64, but no reaming or riveting of same was done. Leaf No. 65 was erected 13 panels high and riveted 5 panels high.

No sheathing was put in place on these gates. Two sets of bridges are at work in this lock.

The total tonnage of lock gates erected on the canal to February 1, 1912, without regard to its being riveted or fully fitted, was about 6,646 tons, out of a total of 58,000 tons, or 13 per cent; 330,000 field rivets were driven, out of a total of 5,500,000, or about 6 per cent.

LOCK GATE RECESS COVERS.

The material for a total of 30 recess covers, excepting the cast iron plates, has been received on the Isthmus and unloaded at Gatun. Material for 12 covers was delivered to the contractors for the erection at Gatun, and 4 at Pedro Miguel. Eight covers were in course of erection at Gatun, 3 being practically riveted up, 2 partly riveted, and 3 bolted up and aligned. The grouting of covers will not be done until the rack sections and rails are attached and fully aligned and leveled. No covers have been erected at Pedro Miguel.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection as follows:

(*1*) *For the Stoney gate and cylindrical valve machines, purchased under Circular 614*—The first Stoney gate valve machine was erected, complete, except stem, with motor in place. Final test of the second machine was completed satisfactorily at shop of manufacturer and the same was received on the Isthmus January 2, and will be tested in the same manner as the first machine. Contractors have completed all drawings for the remaining 114 machines and work is progressing satisfactorily. The first cylindrical valve machine was received on the Isthmus and underwent a preliminary mechanical and hydrostatic test on January 6, 1912. The second machine was lost on the steamship *Moldegaard*, which was wrecked. Contractors are making replace shipment.

(*2*) *For the rack railway and other material purchased under Circulars 619, 636-D, 635, 647, and 647-A*—Satisfactory progress has been made during the month on all portions of these contracts.

(*3*) *For the gate operating machines, Class 1, and miter forcing machines, Class 2, purchased under Circular 627*—The first miter gate moving machine was received and partially installed. The first miter forcing machine was received on January 15, and will be installed and tested when the miter gates are completed to such a stage as will permit of same.

(*4*) *For the gate and girder hoisting machinery for the emergency dams, purchased under Circular 616*—Satisfactory progress was made on this machinery during the month.

(*5*) *For the Gatun hydro-electric station, purchased under Circular No. 648*—Contract was entered into with the Pelton Water Wheel Company on December 2, 1911, for the turbines, governors, headgates, and penstocks; with the Niles-Bement-Pond Company on January 8, 1912, for one 30-ton crane; and with the General Electric Company on December 2, 1911, for generators, exciters and exciter sets. No deliveries have yet been made under this Circular.

(*6*) *For electric towing locomotives, purchased under Circular 650*—Working drawings are being prepared for Class 1, Item 1, covering one trial towing locomotive; award not yet made for the balance of the locomotives.

(*7*) *For locomotive cranes, derricks and hoisting engines for erection plant of machinery and electrical equipment, purchased under Circular 662*—Work is progressing satisfactorily on Class 1, Items 1 and 2, covering four 15-ton locomotive cranes and auxiliary hooks and lines. On January 18, bids under Class 2, for 4 stiff-leg derricks and 4 hoisting engines were rejected, and 2 locomotive cranes with auxiliary hooks and lines were requested instead.

The force installing machinery and electrical equipment on the Isthmus during the month continued with the placing of bench marks for various equipment at Gatun Locks, and on January 2, 1912, similar work was started at Pedro Miguel Lock, at which time the First Division field office for the Pacific lock was established. Three hundred and thirty-two and four-tenths tons of locomotive track material were distributed along the lock walls ready for assembling, and during the month 23.55 cubic yards of concrete were placed.

EMERGENCY DAMS.

The inspection work in the United States progressed satisfactorily during the month. Up to January 20, a total of 312 drawings of the turning and wedging machinery, and a large number of drawings covering structural parts, have been completed and approved. At the rolling mills and foundries, 294 tons of riveted nickel steel, 138 tons of riveted structural steel, 65 tons of carbon steel castings and forgings, and about 150 tons of miscellaneous cast iron castings, vanadium wheels and vanadium steel castings, in all about 650 tons of material, were fabricated and accepted during the month. Satisfactory progress has been made on the roller bearings, all the roller bearings for three complete dams having been manufactured and accepted to date.

AIDS TO NAVIGATION.

During the month 117 acres of land were cleared in the Gatun Lake section for sites for beacons and reference buoys; 12,200 linear feet of trochas were cut, and the necessary land for making surveys was cleared and profile taken. The locations for two buoys were referenced during the month in the Gatun Lake section.

Range 9–11. Pacific Division—The spiral reinforced concrete stairways in both towers have been erected, and the doors and windows have been put in place.

Range 1–2. Pacific Division—Same status as when reported last month.

Range 13–14. Pacific Division—Front light—The tower walls have been carried up to their final height, 44 feet to focal plane; the newel post has been erected to a height of 12 feet, and the wooden forms for the concrete entrance steps have been completed ready for pouring the concrete. Rear tower—The concrete vestibule and entrance steps have been completed; the newel post has been carried up to its final height, and the spiral concrete stairs are in place up to a height of 8 feet.

Range 5–6. Atlantic Division—The walls of the front tower have been carried up to a height of 11 feet above the foundation. The rear walls have been carried up to their final height of 48 feet to focal plane.

Range 21–22. Gatun Lake Section—The front tower walls have been carried up to a height of 20 feet above the foundation.

Range 24–25. Gatun Lake Section—The excavations for both towers have been dug and the concrete foundation for the front tower is under way. The greater portion of the material for both towers has been delivered near the sites.

At the general plant of the Lighthouse subdivision at Balboa, 174 reinforced concrete stair treads, 28 radial beams, 11 stair strings, 18 architrave moldings, 10 window lintels, and 9 window sills were cast during the month.

The sun valve used in connection with the acetylene outfits temporarily installed in the towers of Range 9-11, Pacific Division, was installed and the test of its efficiency was started on the 17th of the month. During the month both lights worked satisfactorily.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month two shovels were engaged on borrow-pit excavation for the locks backfill, 49,686 cubic yards of material being excavated.

Backfill—Backfilling behind the side walls of the middle and lower locks, and in the center wall of the middle lock, was continued. A total of 75,555 cubic yards were placed during the month, of which 6,892 cubic yards were placed in the center wall, making the total to February 1st, 1,199,598 cubic yards. Backfilling, on the basis of the present estimate, is therefore 74.72 per cent completed. Calculations are now being made on the basis of the width of the berm required for the fortification work. This increased width of berm will largely increase the backfill, especially on the east side of the locks, where it was originally proposed to limit the width of fill to 100 feet from the face of the wall.

Receiving and Issuing Material—The receipts of rock exceeded the issues by 10,281 cubic yards; the consumption of cement exceeded the receipts by 1,707 barrels; the consumption of sand exceeded the receipts by 7,430 cubic yards.

Mixing and Placing Plants—Both plants, and all portable mixers, have been kept in satisfactory operation during the month.

Power Plant and Pumps—The operation of the power plant and pumps during the month was satisfactory. The total output of the power plant was 1,383,800 k. w. hours.

Iron and Steel Work—During the month 267.5 tons of fixed steel and 100,191 feet of reinforcing rods were placed; 23 tons of reinforcing rails and 24.7 tons of electric return track were laid.

Concrete Work—There was a decrease of 8,607 cubic yards in the amount of concrete laid as compared with the figures for the preceding month. The daily average for the 26 working days was 1,345½ cubic yards as compared with a daily average during December of 1,744 cubic yards. The total amount of concrete placed during the month was 34,983 cubic yards, including 6,177¼ cubic yards of reinforced concrete. The place measurement exceeded the bucket measurement by 68 cubic yards. Of the total concrete, 6,535 cubic yards were placed in the upper lock 912 cubic yards in the middle lock, and 27,536 cubic yards in the lower lock. The concrete work for the entire lock system was 89.8 per cent completed at the end of January.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)..	11.47	8.50
Average number of hours per day worked, per strand of cableway, laying concrete and large stone (actual working time)......................	3.54	....
Average number of mixers per day......................	3.47	2.00
Average hourly output per mixer (actual working time), cu. yds.	55.69	71.01
Average amount of concrete and large stone laid per hour, per strand of cableway (actual working time) cu. yds........	30.90	....
Large stone laid, cu. yds........	28	....
Concrete laid, cableways, cu.yds.	24,860	....
Concrete laid, crane and derrick cu. yds......................	1,684	....
Concrete laid, derricks, cu. yds..	....	6,870
Concrete laid, portable mixers...	....	1,473.5
Total amount of concrete and large stone laid, cu. yds.......	26,572	8.343.5

GATUN DAM.

*Construction during the month increased the total fill by 413,166 cubic yards, making the total amount in place 17,723,733 cubic yards. The dam is 80.19 per cent completed.

**Hydraulic Fill*—The dredges increased the hydraulic fill by 173,900 cubic yards. The total hydraulic fill in place January 31, was 8,941,195 cubic yards.

**Dry Fill*—The material received from the Central Division, and from steamshovels Nos. 116 and 134, amounting to 239,266 cubic yards, was placed on the north and south toes of the dam, east and west of the spillway, making the total dry fill in place 8,782,538 cubic yards.

*Figures given are based on semi-annual survey of dam.

GATUN SPILLWAY.

Excavation—During the month, 125 cubic yards of earth and 1,125 cubic yards of rock were excavated by hand in preparing foundations, making the total January 31st 1,587,626 cubic yards.

Backfill—During the month, no extension was made in the backfill.

Concrete—The work of placing concrete was continued. The amount placed during the month aggregated 8,905 cubic yards, which increased the total to †176,404 cubic yards. The concrete work for the spillway was 78.4 per cent completed.

†One thousand yards added to cover error in August report.

HARBOR AND CHANNEL SECTION.

Excavation below Sealevel at Mindi—During the month two steamshovels removed 450 cubic yards of earth and 32,715 cubic yards of rock from the canal prism.

Dredging from Ocean to Mindi—Six dredges removed 495,340 cubic yards of earth and 24,888 cubic yards of rock from the canal prism. In addition, Dredge *No. 4* removed 40,434 cubic yards of earth from the pit for spoiling dredged rock at the lock site, and derrick-barge *No. 1* removed 12,345 cubic yards of earth from the East Diversion at Mount Hope. The drillboat *Terrier* drilled 360 feet, used 3,400 pounds of powder and shot 1,672 cubic yards of rock to minus 45 feet. At Mile Post 6 plus 4,000 feet to 4,250 feet, 2,565 cubic yards of rock were drilled with star drills and blasted. On January 31st, 40 feet of water could be carried from Zero to Zero plus 2,800 feet; 35 feet to Mile Post 3 plus 2,600 feet; 30 feet to Mile Post 3 plus 3,700 feet; 20 feet to Mile Post 5 plus 2,438.9 feet, the point of intersection with the French Canal.

PORTO BELLO.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day, hours............	8.00
Average number of hours worked per day...	3.76
Average number of cubic yards per hour of working day.........................	225.28
Average number of cubic yards per working hour................................	479.78
Maximum day's output (4 hours 48 minutes) cu. yards.........................	2,279
Average day's output (26 days) cu yds......	1,802.23
Average hourly output (173 hours 11 minutes) cu. yds.........................	270.57
Total output for the month, cu. yds........	46,858

SAND, STONE, AND CEMENT SERVICE.

In connection with this service plant steamed 4,165 miles, handled 454 barges, and carried 2,436 passengers.

WEST BREAKWATER, COLON.

Forty-eight thousand, eight hundred and twenty-three cubic yards of material were excavated, of which 48,423 cubic yards were dumped from the trestle into the breakwater, and 400 cubic yards used in tracks. The double track trestle was extended 319 linear feet. On January 31 the trestle extended 9,065 linear feet from shore. During the month 7,287 cubic yards of Porto Bello rock were placed on the breakwater, making a total of 24,395 cubic yards used for that purpose to February 1. The total amount of rock dredged and dumped on the west breakwater to January 1, 1912, was 854,717 cubic yards. During the month 24,888 cubic yards of rock were dredged and dumped, increasing the total to 879,605 cubic yards. The amount of dry fill placed to February 1 was 618,918 cubic yards.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Central Division.

During the month of January the total amount of material excavated in the Central Division was 1,452.840 cubic yards, of which 241,035 cubic yards were classified as earth and 1,211,805 cubic yards as rock. Of this quantity, 1,421,133 cubic yards were removed by steamshovels, 23,168 cubic yards by cranes, and contractors removed 991 cubic yards by sluicing and 7,548 cubic yards by hand. Of the total, 1,444,392 cubic yards was primary excavation for the canal prism, and 8,448 was gravel removed outside the prism.

The daily average number of steamshovels at work during the month was 41.92, and the total number of shovel days was 1,090, as compared with 41.54 at work during the month of December with 1,038½ shovel days.

For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'k'g days.	Av. yards per shovel day
		Rock.	Earth.			
	Cu. Yds.	Cu. Yds.	Cu. Yds.			C. Y.
1911: Jan.....	1,585,406	1,158.360	427,046	47.68	25	1,330.04
1912: Jan....	1,421,133	1,204.657	216,476	41.92	26	1,303.79

Rainfall at Empire: 1911, 0.02 ins.; 1912, 0.01 ins.

The above table shows the average output per shovel to be 1.97 per cent greater in January, 1911, than in the corresponding month of 1912.

The total amount of material excavated from the prism in the Culebra Section of the Central Division in January, 1912, 1,416,035, cubic yards, was the greatest record in that section for the month of January, the next highest being January, 1911, when 1,356,394 cubic yards were removed.

The total estimated amount of material to be removed in the Central Division, according to the revised estimate of July 1, 1911, was 101,801,296 cubic yards, and up to February 1, 1912, 86,871,307 cubic yards had been removed, leaving 14,929,989 cubic yards to be removed in order to complete all excavation in the Central Division. From these figures it will be seen that 85.33 per cent of all excavation in the Central Division had been completed up to the close of the month of January, and 14.67 per cent remained uncompleted.

Considering the two sections which compose the Central Division, the excavation completed and that to be completed at the close of January operations was as follows:

CULEBRA SECTION.	Cu. Yds.
Completed..........................	74,918,859
To be completed.....................	14,525,146
CHAGRES SECTION.	***Cu. Yds.***
Completed..........................	11,952,448
To be completed.....................	404,843

From the above figures it will be seen that the Culebra Section, locally known as the "Culebra Cut," was 83.76 per cent completed, with 16.24 per cent to be completed; the Chagres Section was 96.72 per cent completed, with 3.28 per cent to be completed.

During the month 87,502 cubic yards of material were hauled from the canal prism and dumped in the embankment for the roadbed of the relocated Panama railroad. The total amount of spoil from the Central Division used for this purpose at the close of the month was 4,146,793 cubic yards. The Central Division also delivered at Gatun 221,228 cubic yards of rock and earth for use in the construction of the dam, making the total for this purpose at the end of January 5,277,395 cubic yards. During the month 11,539 cubic yards of rock and earth were furnished for the Colon breakwater, and 30,780 cubic yards to the Pacific Division for backfill at Pedro Miguel Locks.

The daily average number of laborers at work on the whole Division during the month was 7,506, and the daily average number of gold employes was 785.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

Excavation—The total excavation during the month amounted to 168,984 cubic yards, of which 35,202 cubic yards were classified as earth, and 133,782 cubic yards as rock.

Filling and Embankment—During January, 38,044 cubic yards of dry filling were added to the prism of the west dam at Pedro Miguel, increasing the total amount of material in place at the close of the month to 356,965 cubic yards. The backfill at Pedro Miguel was increased by 30, 747 cubic yards, the total in place at the end of the month amounting to 500,056 cubic yards.

At Miraflores, 24,920 cubic yards were added to the dry fill in the toes of the west dam, increasing the total amount in place at the end of the month to 1,095,297 cubic yards. The backfill was increased by 38,733 cubic yards, making the total amount of backfill in place at the end of the month 390,414 cubic yards.

Pedro Miguel Lock—The general backfilling of the lock walls was continued. The work of constructing the west dam was continued by filling rock into the west toe by Lidgerwood trains from Culebra Cut, also by filling in the east and west toes with spoil from the lock excavation. The McClintic-Marshall Contruction Company began dismantling the fourth and final chamber crane at Pedro Miguel during the latter part of the month, preparatory to moving it to Miraflores and re-erecting it in the east chamber of the lower lock. The amount of iron placed in the masonry aggregated 175,897 pounds.

Concrete Work—The total amount of concrete and large stone laid at Pedro Miguel was 15,077 cubic yards, as compared with 14,360 cubic yards during December. The concrete was placed as follows: 308 cubic yards in the northeast wing wall; 3,921 cubic yards in the north center guide wall; 3,225 cubic yards in the east wall; 4,115 cubic yards in the center wall; 171 cubic yards in the west wall; 1,849 cubic yards in the floors; 1,414 cubic yards in the southeast wing wall; 74 cubic yards in the railroad culvert, west dam.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT PEDRO MIGUEL.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	0.64	4.65
Average number of mixers per day	....	4.54
	Cu. Yds.	*Cu. Yds.*
Average hourly output per mixer (actual working time)	....	19.00
Average amount of concrete and large stone laid per hour, per chamber crane (actual working time)	42.61	....
Large stone laid	....	....
Concrete laid	706.00	14,371.00
Total concrete laid	706.00	14,371.00

Permanent plant consisted of 1 chamber crane. Auxiliary plant consisted of a daily average of two 2-cubic yard mixers, 2.54 ½-cubic yard mixers and 4.19 locomotive cranes and derricks.

Miraflores Locks—Excavation for the culvert system, and the placing of concrete in the lower lock were continued during the month. Dry excavation was continued in the lower lock and in the canal prism immediately south of same by the use of 6 steamshovels. The backfilling of the east and west lock walls, also filling on the east and west toes of the west dam were continued. The sinking of foundation caissons for the north center guide wall, and the construction of concrete caisson shells, were continued. The McClintic-Marshall Construction Company completed the erection of chamber crane No. 1 in the east chamber of the lower lock on January 24. During the month the amount of iron placed aggregated 281,626 pounds.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8.00 & 12.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	5.62	5.85
Average number of mixers per day	6.31	3.85
	Cu. Yds.	*Cu. Yds.*
Average hourly output per mixer (actual working time)	41.25	31.21
Average amount of concrete and large stone laid per hour, per berm, or chamber crane (actual working time)	59.83	....
Large stone laid	....	....
Concrete laid	30,541.00	17,875.00

Permanent plant consisted of 2 berm cranes working 8-hour day and 2 berm cranes working 12-hour day, and a daily average of 1.54 chamber cranes.

Auxiliary plant consisted of two 2-cubic yard mixers, daily average 1.62; three ½-yard mixers, daily average 2.31, and four locomotive cranes and derricks, daily average 1.88.

Concrete Work—The total amount of concrete and large stone laid at Miraflores was 48,416 cubic yards, as compared with 48,772 cubic yards during December. The concrete was placed as follows: 1,004 cubic yards in the north center guide wall; 24,592 cubic yards in the east wall; 8,224 cubic yards in the center wall; 6,126 cubic yards in the west wall; and 8,470 cubic yards in the floors.

DISTRICT NO. 2—DREDGING.

The following is a statement of the output of the five dredges which were in operation during the month, and of the amount of material excavated hydraulically:

Dredge.	Type.	Work.		Plant.		Total.	Remarks.
		Earth.	Rock.	Earth.	Rock.		
		Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	
Cardenas	Dipper	16,093	13,819	2,000	....	31,912	Place measurement
Marmot	Ladder	23,062	....	....	....	23,062	Place measurement
Badger	Ladder	88,977	4,576	....	....	93,553	Scow measurement
Mole	Ladder	50	17,350	....	....	17,400	Scow measurement
Culebra	Suction	187,889	....	10,752	....	198,641	Scow measurement
Total	....	316,071	35,745	12,752	....	364,568	
Hydraulic excavation	....	*60,302	....	....	....	60,302	Place measurement
Grand Total	....	376,373	35,745	12,752	....	424,870	

*Excavated from Canal prism, south of Miraflores lock site.

CHAMÉ SAND EXCAVATION.

Approximately 50,287 cubic yards of sand were excavated at Punta Chamé and delivered at Balboa.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Work was continued on the Panama street improvements.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours)	8.00
Average number of hours per day (actual working time)	6.47
Average number of cubic yards crushed per hour per working day	252.3
Average number of cubic yards crushed per working hour	349.5
Total output for the month, cu. yds	59,043.0

Relocation of Panama Railroad.

During the month 316,666 cubic yards of material were excavated, increasing the total excavation at the close of the month to 9,939,837 cubic yards, and 501,290 cubic yards of material were placed in embankment, increasing the total for this purpose to 16,145,874 cubic yards.

The daily average number of steamshovels at work was 8.76. and the total number of working days was 26.

For comparison with the work done by steamshovels during the preceding month, and during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'kg days.	Av. yards per shovel day.
		Rock	Earth.			
1911:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
Jan	251,175	162,3 0	88,785	6.00	25	1,675
Dec	345,520	197,355	148,165	10 40	25	1,329
1912:						
Jan	320,035	178,210	141,825	8.76	26	1,406

No temporary trestle was driven during the month. Work on bridges and culverts was continued. At the end of the month there were 70,568 linear feet of 70-pound and 111,653 linear feet of 90-pound track, or a total of 182,221 linear feet. The force averaged 2,166 men.

Quartermaster's Department.

LABOR.

The force report of January 10, 1912, shows a combined force for the Isthmian Canal Commission, Panama Railroad, the Panama Railroad Relocation, and the Commissary Department of 38,505 men, the largest force since the inception of the work, with the single exception of March, 1910, when the force report showed a total of 38,676 employes. Owing to a reduction of force a number of European laborers were discharged during the month.

QUARTERS.

Due to the increase of force of gold employes of the Pacific Division, Fortification Division, and the McClintic-Marshall Company, there is a lack of bachelor quarters in the Corozal, Pedro Miguel and Gatun districts. Work authorized at Culebra will result in the demolition of 24 cottages, which will necessitate the transfer of 24 families to other quarters.

BUILDING CONSTRUCTION.

The additional construction authorized for the Tenth Infantry at Las Cascadas is nearly completed, and a number of the houses have been turned over and occupied. The addition to the Hotel Tivoli is nearing completion and it is expected that the two upper floors will be ready for occupancy before the end of the month. The lodge hall at Culebra has been demolished and is to be re-erected at Corozal as bachelor quarters. Ten cottages have been demolished at Culebra and a number remain which will have to be torn down during the month of February. The buildings which remained unsold at San Pablo, Tabernilla and Bohio have also been demolished; the greater part of these were small sheds of little value.

MATERIAL AND SUPPLIES.

The value of the material received during the month was greater than for any other month of the fiscal year to date, and greater than for the corresponding month of the preceding year. The material received included over one hundred thousand dollars worth, bought on "A" requisitions for the Panama Railroad Company. The shortage of lumber still continues and although over 2,000,000 feet were received during the month, approximately that amount was used in the work, and there is very little reserve stock in the yards. Large shipments of lumber and piling are expected during the month of February, which should relieve the situation. The value of material received from the United

States during the month was $1,073,117.25. Supplies during the month were delivered by 41 steamers, the total weight of cargo aggregating 46,582 tons, exclusive of 1,303,400 feet B. M. yellow pine lumber, 949,367 feet B. M. Douglas fir lumber, 141,877 feet B. M. white oak lumber, 754 pieces of piling, and 324 cross ties.

Subsistence Department.

The operation of European laborers' messes and the colored laborers' kitchens showed a net profit of $4,003.34, and the line hotels a net loss of $1,841.62. The operation of the Tivoli Hotel showed a net profit of $7,122.72, and there was a net profit on the restaurants, penitentiary, tugs and dredges of $95.12. The net profit in subsistence operations was $9,379.56.

Department of Civil Administration.

COURTS.

During the month one criminal case was disposed of in the Supreme Court, 10 civil and 55 criminal cases in the Circuit Courts, and 81 civil and 597 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for January amounted to $404,891.70, and the fees to $1,873.79. Receipts for stamp and card sales, and newspaper postage aggregated $7,217.84. The total collection of revenues made by the division was $16,196.32, and the collection on account of court fines, costs and fees, $3,021.25.

Twenty-five vessels entered at, and 26 vessels cleared from the port of Ancon; and 29 vessels entered at, and 23 cleared from the port of Cristobal. Three hundred and sixty-six passengers arrived at the port of Ancon, and 590 at the port of Cristobal; and 401 and 251 passengers, respectively, departed. Two estates were settled during the month, and on January 31 there were 12 estates of deceased American employes in course of settlement.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 572, of whom 527 were men and 45 women. Twenty-five nations, or 52 separate states and dependencies, were represented. Fourteen convicts were committed to the penitentiary, and 7 were discharged, leaving 152 in confinement at the close of the month. The cost of guarding and subsisting the convicts was $3,292.58, and the value of their work on Canal Zone roads was $2,634.40. The total number of employes in the Division on January 31 was 263.

DIVISION OF FIRE PROTECTION.

Fifty-nine fires were reported in the Canal Zone during the month. This is an increase of forty-three over the previous month and is accounted for by the prolonged dry weather. The damage to Commission property was $430.00, and to private property $21.00.

DIVISION OF PUBLIC WORKS.

In the city of Panama the average daily consumption of water was 1,440,245 gallons, and in Colon 1,117,625 gallons.

The usual inspection and maintenance work of this division was performed during the month.

DIVISION OF SCHOOLS.

The net enrollment in the white schools during the month was 1,190, and the average daily attendance 997.5, or 94.1 per cent of the enrollment. In the colored schools the net enrollment was 1,333, and the average daily attendance 776.3, or 84.1 per cent. Forty-six white and 28 colored teachers were employed in the division on January 31.

Department of Sanitation.

The total number of deaths from all causes among employes was 35. These were divided as follows: From disease, 21; and from violence, 14, giving the annual average per thousand of 4.86 and 3.24, respectively.

The annual average death rate per thousand among employes for the month of January in previous years since American occupation was as follows:

1905	15.40
1906	40.93
1907	25.62
1908	12.72
1909	10.98
1910	10.57
1911	10.14

The annual average death rate per thousand in the cities of Panama, Colon and the Canal Zone, including both employes and non-employes, was 17.67.

The annual average death rate per thousand for the month of January among the same class of population for previous years was as follows:

1905	46.50
1906	47.75
1907	35.12
1908	26.66
1909	22.86
1910	21.26
1911	21.05

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was, for whites 7.57; blacks, 3.98, giving a general average of 4.86. For the same month during 1910, the annual average death rate per thousand from disease was, whites, 1.95, blacks, 8.91, giving a general average of 7.21; and for the same month during 1911, whites, 1.89, and blacks, 6.23, giving a general average of 5.07.

Among employes during the month, deaths from the principal diseases were as follows: Chronic nephritis, 3; hœmoglobinuric fever, 1; lobar pneumonia, 3; malaria fever, E. A., 1; tuberculosis of the lungs, 3; typhoid fever, 1, leaving a balance of 9 deaths from all other diseases, and 14 deaths from external violence.

No cases of yellow fever, small pox, or plague originated on the Isthmus during the month. One case of yellow fever was removed from a vessel coming from Guayaquil and isolated at Culebra Island quarantine station.

Respectfully,
H. F. Hodges, *Acting Chairman.*

OFFICIAL CIRCULARS.

Employes Temporarily Obtained from Mechanical Division.

Culebra, C. Z., February 21, 1912.

Circular No. 357-c:

The information to be furnished division engineers in the case of employes temporarily obtained from the Mechanical Division under paragraph 4 of Circular No. 357 will hereafter be given on Form C. E. 333. One copy of the form for each employe will be mailed to the division engineer, the Examiner of Accounts, and the master mechanic or general forman of the shop, and one copy will be given to the employe, who will deliver it to the head of the shop when he reports for duty.

One or two days before employes temporarily obtained from the Mechanical Division, as provided for in Circular No. 357, are to be returned, the head of the shop will notify the Superintendent of the Mechanical Division and will obtain from him the number of the house and room therein in which each employe will be quartered upon his return to the Mechanical Division. The head of the shop will have four copies of the form made out for each employe returned, and will mail one copy thereof to the division engineer, the Examiner of Accounts, and the Superintendent of the Mechanical Division, and one copy to the employe, who will deliver it to the Superintendent of the Mechanical Division when reporting for duty.

The name of but one employe will be entered on the blank.

Until the supply of Form M. D. 20? shall have been exhausted it will be used by the Mechanical Division.

H. F. Hodges,
Acting Chairman, Isthmian Canal Commission.
Second Vice President, Panama Railroad Company.

Additional Ratings.

Culebra, C. Z., February 24, 1912.

Circular No. 229-w:

The following additional designations and rates of pay, applicable only to employes on dredges, which employes may be used interchangeably, are hereby authorized:

Designation.	Unit.	Rate of Pay.
Oilers	Mo.	$55.00
Watertenders	Mo.	55.00

H. F. Hodges,
Acting Chairman and Chief Engineer.

No Sight-seeing Train on Holidays.

Panama Railroad Company,
Office of General Superintendent,
Colon, R. P., February 27, 1912.

All Concerned:

Effective at once, the sight-seeing excursion train will not be operated on holidays.

J. A. Smith, *General Superintendent.*

Married.

LINDSAY-MARSHALL—At Christ Church, Colon, February 17, by the Rev. Edward Cooper, Olive Elizabeth Marshall of Whitewater, Wisconsin, to Courtenay T. Lindsay of Spartanburg, S. C. Canal Zone residence, Toro Point.

Lost—Between house 153 and railroad station, Empire, on Sunday morning, February 18, a plain gold bracelet, with inscription "Edgar to Floy, 1-1-11." Reward if returned to Y. M. C. A.

Found—A small roll of money was picked up on the floor of the Corozal branch commissary on Saturday morning, February 17, at 11.30 a. m. Loser will secure same by calling on storekeeper.

WEATHER CONDITIONS, CANAL ZONE, JANUARY, 1912.

Continued dry season weather prevailed during the month in all sections of the Canal Zone. The rainfall was below normal at all stations, the average fall over the Isthmus being the lightest of record for any month during the past six years. Practically no rain was recorded in the Pacific Section and very little over the greater part of the Central Section.

The average temperature and wind movement were above normal, the wind movement at each station being the highest or record for the month of January.

The mean relative humidity, atmospheric pressure and cloudiness were generally below the normal, and there was a marked decrease in night fogginess, compared with December conditions.

Stations.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean	Maximum.	Date.	Minimum.	Date.		Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date
Colon	29.872	82.2	88	Jan. 22	76	Jan. 8	77	.28	3.96	9	10,772	N.	32	N.E.	Jan. 5
Culebra	29.851	79.0	90	Jan. 8	68	Jan. 27	85	.05	1.75	2	7,697	N.W.	28	N.W.	Jan. 31
Ancon	29.838	80.6	93	Jan. 22	68	Jan. 26	81	T	1.02	0	8,564	N.W.	24	N.W.	Jan. 3

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Thirty-one men took part in the first Pentathlon Athletic Meet held on the Canal Zone, which took place on February 22. Each contestant competed in the 100-yard dash, 12-pound shot put, running high jump, pole vault, and half-mile run. The scoring was based on 100 points as perfect in each event. This style of meet was given to encourage all-around proficiency. A summary or results follow:

Name.	Y. M. C. A. or club.	Points.	Medal.
Koperski	Empire	379	Silver
Robinson	Gorgona	347	Silver
Luttrell	Empire	337	Silver
Barcroft	Culebra	329	Silver
Mosier	Tenth Infantry	329	Silver
Miller	Empire	323	Silver
Chadbourne	Corozal	320	Silver
Koperski	Cristobal	315	Silver
Whittles	Crisbotal	312	Silver
Matthue	Cristobal	307	Silver
Myers	Camp Elliott	278	Bronze
Johnson	Gorgona	277	Bronze
Grim	Corozal	267	Bronze
Collier	Gorgona	265	Bronze
Burns	Tenth Infantry	263	Bronze
Simms	Corozal	254	Bronze
Wright	Gatun	246	Bronze
Bessey	Corozal	246	Bronze
Marshall	Camp Elliott	244	Bronze
Anderson	Camp Elliott	237	Bronze
Howard	Camp Elliott	236	Bronze
Mengel	Culebra	230	Bronze
Alley	Tenth Infantry	224	Bronze
McDonald	Tenth Infantry	221	Bronze
Chatfield	Gatun	214	Bronze
Cousineau	Cristobal	213	Bronze
Levy	Cristobal	170	....
Knapp	Camp Elliott	170	....
Calvert	Camp Elliott	91	....

The team trophy was won by the Cristobal Y. M. C. A., whose five high men made a total of 1,347 points. Camp Elliott was second, with a total of 1,183 points. The relay race was won by Cristobal. Messrs. Koperski, Whittles, Levy, and Matthue composed the team.

Officials assisting in the meet were as follows: Referee, Burrell; Starter, Geer; Announcer, Holt; Track Judges, Warr, Ross, Safford and Kramer; Clerks of Course, Dwelle, MacSparran, Smith, DeCora, Voltz, Robertson, and Diehl; Timers, Conn, Simms, Poindexter, Evans, Nellis, Montrey, and Hesdsen; Field Judges, Hopkins, Louden, Kuentz, Strothers, Hall, Decker, and Weiser; Inspectors; Simmons and Mennis.

CULEBRA.

A Spanish class has been organized and will meet on Saturday evening at 8 o'clock. Everyone who wishes to join this class may do so by making application at the desk. It is open to all.

The high scores in duckpins for the week are as follows: Hobart, 110, 101; Hill, 111; Brown, 101, 102; Sickler, 102, 111; Sterns, 106; Driscoll, 101.

EMPIRE.

It is expected that the Empire minstrel show will give its first performance on March 5, at Empire

The following high scores were bowled on the alleys during the past week: *Duckpins*—Dakin, 100; Pinney, 104, 101, 110, 109, 115; Giavolli, 108; Rodeighiro, 103, 113, 102; H. King, 101; Goolsby, 111, 101; Grant, 101. *Candle pins*—Pinney, 118; Grund, 106; Nelson, 107; H. King, 102; Grant, 105.

GORGONA.

A new Spaulding punching bag and latest model swirl have been placed on the front veranda by the gymnasium, and can be used at any time by those desiring

The Religious Work Committee met at the call of the chairman, Judge J. B. March, on Monday night February 26. The following men are on the committee: Messrs. March, Lister, Dougherty, Packard, and Otis. It was decided to start an "Every Day in the Year Club" next Friday night, March 1, at 7.15 p.m. All men are cordially invited to attend. The meeting will be in the secretary's room.

GATUN.

The Gatun Choral Club will give the "Holy City" in the near future. In addition there will be a miscellaneous program during the first half of the evening. The same program will be given at several different clubhouses. A. B. Dickson will act as musical director.

W. S. Mitchell led the meeting of the Discussion Club on Sunday evening, February 25. The subject was "A Sane and Practical Program for Christian Politics." Twenty-five men attended.

CRISTOBAL.

On Monday night a week ago a meeting of all of the men interested in bowling was held in the bowling alleys and it was decided to start a local duckpin league on Monday, February 26, 1912, the league to be known as the Cristobal Y. M. C. A. National Duckpin League.

BASEBALL.

The series of games between the New Orleans team and the Isthmian All-Star team was concluded on Sunday, February 25. New Orleans won 4 of the 5 games.

GAME AT COLON, FEBRUARY 22, 1912—(MORNING.)

All-Stars	0	0	0	2	0	1	0	0	x—3
New Orleans	0	0	0	0	0	0	0	1	0—1

GAME AT COLON, FEBRUARY 22, 1912—(AFTERNOON.)

New Orleans	0	1	0	1	0	5	0	0	1—8
All-Stars	1	3	0	0	0	0	0	0	0—4

GAME AT ANCON, FEBRUARY 25, 1912.

New Orleans	3	0	1	0	0	0	0	0	1—5
All-Stars	0	0	0	0	2	0	0	0	0—2

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Gatun, C. Z., Sunday, March 3, 1912 at 5.00 p. m.

The next concert will be given at Hotel Tivoli, Ancon, March 10 at 8.00 p. m.

Misdirected Letters.

ANCON, February 24, 1912.

The following insufficiently addressed letters originating in the United States and its possessions have been received at the office of the Director of Posts and may be secured upon request of the addressees:

Andrews, William B.
Adams, J. H.
Bethea, A. W.
Baughman, Rene
Briggs, Chas. B.
Barker, Chas.
Brown, Mr. and Mrs. Jack
Bataloa, Miss Minnie
Betterton, Dr. Ed.
Cave, Edward
Doran, John H.
Dulosky, Mrs. Henrietta
Darling, Mrs. Ida
Douglass, Mrs. H. F.
Drake, Ed.
Dierkes, Miss Marie
Fraser, Chas. F.
Gardner, Harold, B.
Greenwood, Mrs. Harry
Goodman, Mrs. Emma A.
Howard, Mr.
Howe, William H.
Haley, Mr. C. M.
Haynes, J. N.
Hummer, Charles D.
Hines, Joseph
Hinnershitz, Chas. W.
Hunt, Miss S.
Innis, Howard B.
Johnson, Edward Ford
Keegan, J. J. (2)
Lord, Charles
Lucky, Mrs. A. A.
Logie, Mrs. Wm.
Lloyd, Howard
Lumsden, James A.
Lewis, Daniel
Little, David J.
McCann, Wm.
Morewood, Thomas W.
Muldoon, A. C.
Maloney, Mrs. Pat.
Nickel, O.
Osborne, Norman
Pearce, H. A.
Purdy, George F.
Russell, G. D.
Rosen, Morris
Sabin, Robert B.
Schoenberger, H.
Shortt, A. D.
Sherry, Hugh
Shoup, Vernon
Severn, Chris J.
Stoddard, A. B.
Slocum, M. S.
Tompson, H. R.
Violette, Frank
Willes, J. Samuel

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, February 24, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Feb. 18	125.1	91.5	44.0	14.9	14.9
Mon., Feb. 19	125.1	91.4	44.0	15.0	15.0
Tue., Feb. 20	125.2	91.5	44.0	15.2	15.2
Wed., Feb. 21	125.2	91.5	44.1	15.3	15.3
Thurs., Feb. 22	125.1	91.4	44.0	15.4	15.4
Fri., Feb. 23	125.1	91.4	44.0	15.5	15.5
Sat., Feb. 24	125.0	91.4	44.0	15.6	15.6
Height of low water to the nearest foot	125.0	91.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending March 6, 1912. (75th meridian time):

DATE.	High	Low	High	Low
	A.M.	A.M.	P.M.	P.M.
February 29	12.09	6.42	1.00	7.19
March 1	1.27	7.50	2.06	8.20
March 2	2.30	8.47	3.02	9.16
March 3	3.23	9.38	3.50	10.04
March 4	4.11	10.25	4.35	10.50
March 5	4.55	11.08	5.17	11.33
March 6	5.40	11.57	5.58	......

The following vessels arrived at or departed from, the port of Balboa during the week ending February 24:

Arrivals—February 20, *Quilpue*, from Valparaiso; February 21, *Acapulco*, from San Francisco; February 23, *Ecuador*, from Guayaquil.

Departures—February 19, *Mantaro*, to Callao; February 20, *Navajo*, to San Francisco; February 20, *Aysen*, to Valparaiso; February 23, *Manga Reva*, to San Francisco; February 23, *Riverside*, to San Francisco; February 24, *City of Para*, to San Francisco.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Advance	P. R. R.	Friday	Feb.	23
Panama	P. R. R.	Thursday	Feb.	29
Allianca	P. R. R.	Wednesday	Mar.	6
Colon	P. R. R.	Wednesday	Mar.	13
Advance	P. R. R.	Tuesday	Mar.	19
Panama	P. R. R.	Tuesday	Mar.	26
Allianca	P. R. R.	Monday	April	1
Colon	P. R. R.	Monday	April	8
Advance	P. R. R.	Saturday	April	13
Panama	P. R. R.	Saturday	April	20
Allianca	P. R. R.	Friday	April	26

CRISTOBAL TO NEW YORK.

Colon	P. R. R.	Thursday	Feb.	29
Advance	P. R. R.	Wednesday	Mar.	6
Panama	P. R. R.	Wednesday	Mar.	13
Allianca	P. R. R.	Tuesday	Mar.	19
Colon	P. R. R.	Tuesday	Mar.	26
Advance	P. R. R.	Monday	April	1
Panama	P. R. R.	Sunday	April	7
Allianca	P. R. R.	Sunday	April	14
Colon	P. R. R.	Saturday	April	20
Advance	P. R. R.	Friday	April	26
Panama	P. R. R.	Friday	May	3
Allianca	P. R. R.	Thursday	May	9

NEW YORK TO COLON.

Santa Marta	U. F. C.	Wednesday	Feb.	21
Prinz August Wilhelm	H.-A.	Saturday	Feb.	24
Turrialba	U. F. C.	Saturday	Feb.	24
Metapan	U. F. C.	Wednesday	Feb.	28
Tivives	U. F. C.	Saturday	Mar.	2
Sibiria	H.-A.	Saturday	Mar.	2
Orotava	R. M.	Saturday	Mar.	2
Tivives	U. F. C.	Saturday	Mar.	2
Zacapa	U. F. C.	Wednesday	Mar.	6
Prinz Joachim	H.-A.	Saturday	Mar.	9
Sixaola	U. F. C.	Saturday	Mar.	9
Almirante	U. F. C.	Wednesday	Mar.	13
Prinz Sigismund	H.-A.	Saturday	Mar.	16
Carrillo	U. F. C.	Saturday	Mar.	16
Magdalena	R. M.	Saturday	Mar.	16
Santa Marta	U. F. C.	Wednesday	Mar.	20
Prinz August Wilhelm	H.-A.	Saturday	Mar.	23
Turrialba	U. F. C.	Saturday	Mar.	23
Metapan	U. F. C.	Wednesday	Mar.	27
Prinz Eitel Friedrich	H.-A.	Saturday	Mar.	30
Thames	R. M.	Saturday	Mar.	30
Tivives	U. F. C.	Saturday	Mar.	30
Prinz Joachim	H.-A.	Saturday	April	6
Sixaola	U. F. C.	Saturday	April	6

COLON TO NEW YORK.

Almirante	U. F. C.	Thursday	Feb.	29
Prinz Sigismund	H.-A.	Monday	Mar.	4
Magdalena	R. M.	Tuesday	Mar.	5
Santa Marta	U. F. C.	Thursday	Mar.	7
Prinz August Wilhelm	H.-A.	Tuesday	Mar	12
Turrialba	U. F. C.	Tuesday	Mar.	12
Metapan	U. F. C.	Thursday	Mar.	14
Tivives	U. F. C.	Tuesday	Mar.	19
Thames	R. M.	Tuesday	Mar.	19
Prinz Joachim	H.-A.	Wednesday	Mar.	20
Zacapa	U. F. C.	Thursday	Mar.	21
Sixaola	U. F. C.	Tuesday	Mar.	26
Prinz Sigismund	H.-A.	Wednesday	Mar.	27
Almirante	U. F. C.	Thursday	Mar.	28

NEW ORLEANS TO COLON.

Parismina	U. F. C.	Saturday	Feb.	24
Cartago	U. F. C.	Wednesday	Feb.	28
Abangarez	U. F. C.	Saturday	Mar.	2
Heredia	U. F. C.	Wednesday	Mar.	6
Atenas	U. F. C.	Saturday	Mar.	9
Orleanian	U. F. C.	Wednesday	Mar.	13
Parismina	U. F. C.	Saturday	Mar.	16
Cartago	U. F. C.	Wednesday	Mar.	20

COLON TO NEW ORLEANS

Heredia	U. F. C.	Thursday	Feb.	29
Atenas	U. F. C.	Thursday	Feb.	29
Parismina	U. F. C.	Thursday	Mar.	7
Cartago	U. F. C.	Thursday	Mar.	7
Abangarez	U. F. C.	Thursday	Mar.	14
Heredia	U. F. C.	Thursday	Mar.	14

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a.m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 5 p. m.; ships for New York via Kingston on Tuesdays at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, MARCH 6, 1912. No. 28.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Closing of Spillway at Gatun.

When the work of laying the ogee for the spillway dam at Gatun was resumed in January, all but four of the openings between the construction piers, which then formed the only obstructions across the spillway channel, were closed with heavy timber gates. In front of those closed places the concrete has been placed for the greater part of the toe and ogee, and the four other apertures have since been closed to allow the construction of the final, connecting section of ogee. No water is now flowing through the spillway and Gatun Lake is slowly rising. Arrangements have been made, however, by means of under sluices at elevation + 10 feet, to allow a discharge if it should be desired to keep the water from rising above any specified level. Since the abandonment of the old main line of the Panama railroad and the villages on it between Gatun and Gorgona, no construction work in the Gatun Lake area would be interfered with unless the water should rise to a height of 30 feet above scalevel. The surface of Gatun Lake was at elevation 16.2 feet on Saturday, March 2, and the height of the Chagres River at Bohio was 16.2 feet. Under the prevailing dry season flow, the lake is rising at the rate of .1 foot a day, with a differential of decrease due to extensions of the area affected as the lake spreads.

Foundation for Emergency Dam.

Concrete is being placed for the first of three piers which are to be the foundation for the emergency dam cantilever for the east chamber of Pedro Miguel Lock. Two of the piers, designated main piers, will be 40 by 24 feet in section and the third will be 40 by 11 feet. The depth of each will he approximately 12 feet, though subject to variation on account of the manner of construction, as it will rest directly on the backfill of earth and rock, without the support of piles; when the concrete has been laid to a level a few inches below the top of the side wall of the lock, several months will be allowed for the mass to settle. Then the finishing portions will be placed to make the top of the pier even with the side wall.

One of the main piers will be directly next the side wall, thin sheeting being interposed during the laying of concrete to prevent adhesion and interference with free settling. It will be on a line with the emergency dam sill at the bottom of the chamber and will support the axis on which the cantilever is to be swung. The other piers will be set in excavations in the backfill in the rear of the first, with their inner faces about 125 feet from the face of the side wall. They will be placed parallel, with their adjacent sides 8 feet apart, and will be connected with the side wall by a quadrant of track, over which one end of the cantilever will swing when the other is projected over the chamber. A description of corresponding preparation at Gatun Locks was published in THE CANAL RECORD of December 27, 1911.

The concrete for the piers will be heavily reinforced. At the bottom of the pier which is now under construction seven 70-pound rails have been laid transversely and over them are twelve rows of rails, lengthwise, on approximately 2-foot centers.

Power Riveters for Shops.

Two power riveters have been added to the equipment of the Mechanical Division. At present they are in use in the old shop at Cristobal where the cylinders for the caissons, on which the Panama railroad docks at Cristobal are being built, are being assembled. Later they will be erected in the permanent shop at Balboa. They have 75-inch jaws, and this enables them to do all the riveting on two cylinders, each five feet long, on the center band, and the end band, thus completing a cylinder 10 feet 6 inches over all. These long sections must be joined by hand riveters. Four times as many rivets can be driven in a day by the use of these machines as was possible under the hand process.

Piles Among Buried Cables.

In the construction of a portion of the emergency dam foundation on the backfill west of the upper lock at Gatun, it was planned to drive a number of piles to a depth of about 90 feet, within a square section, fifteen feet on the side, and then remove the earth within this section to the depth of 24 feet below the surface to allow the placing of concrete in the excavation. Eight buried electric cables, running to and under Gatun Locks, cross the section. Inasmuch as they would be in danger of injury by the piles, it was decided to do the excavation first and drive the piles when the cables had been exposed to view and could be avoided with certainty. None of them is lower then 24 feet below the surface. Each pile will be a 10-inch wrought iron pipe, protected at the ends while being driven down to rock and then filled with concrete, as in the construction of caissons.

The eight cables for which this care is necessary were laid in August and October, 1910, when the backfilling had hardly begun, and the subsequent settling of material has twisted them out of their former positions. They were meant for temporary use in construction work. One, of 600-volts tension, runs to the trolley wire which supplies current for moving the cableway tail towers along the east backfill; another, of 6,600 volts, transmits current to the substation at Cristobal. Of the others, which have 2,300 volts, one leads to the Gatun lighting system, two to the Agua Clara pumping plant, one to the shops of the Mechanical and First Divisions, east of the lower lock chamber, and two to the wires for the temporary lighting of the locks.

Culebra Cut Excavation—Steamshovel Records.

Excavation in Culebra Cut during the month of February amounted to 1,319,569, leaving to be excavated 13,175,577 cubic yards. Excavation in the Empire district amounted to 459,665 cubic yards, Culebra, to 827,560, and Pedro Miguel, 62,344. Excavation in February, 1911, in Culebra Cut amounted to 1,403,602 cubic yards. During the same month of this year 15 of the 42 steamshovels at work in the cut were excavating part of the time below elevation 40, and excavation below this level is not counted, because this is the bottom of the Canal.

The highest daily record ever made in the Cut was that of February 28, when 42 steamshovels excavated 65.797 cubic yards.

On March 1, steamshovel No. 124, working in the Culebra Construction District, Central Division, loaded 283 ten-yard Western Dump cars in a working day of eight hours, a total of 2,830 yards of earth excavated during that period. During this time, the shovel was actually at work six hours and 55 minutes, was waiting for cars 50 minutes and cleaning dipper 15 minutes. It is a 70-ton Bucyrus shovel and has a dipper of three yards capacity. This is the greatest amount of material excavated by a 70-ton shovel in one day in the Canal proper since the commencement of work.

Progress In Erection of Lock Gates.

A curved track, ending perpendicularly to the lock walls at the site of the recesses for the upper guard gates at Miraflores, has been laid on the east backfill of the upper lock to provide accommodation for the McClintic-Marshall Company in storing material and erecting gates. The first shipment of material for the Miraflores gates has been made but the work of erection will not begin until after the completion of erection at Pedro Miguel Lock. The two erection bridges now in use at Pedro Miguel will then be moved to Miraflores and may be supplemented by a third bridge in the lower chamber, if desirable. The work at Miraflores will be the last undertaken on the Canal by the company and it will endeavor to concentrate a large force and equipment

NOTES OF PROGRESS.

(Continued.)

there. The force of white structural-iron workers is being continually increased.

At Pedro Miguel the skeletons for the upper and lower main gates, of the east and west chambers, the latest to be undertaken, have been brought to full height. After the sheathing has been placed the erection bridges will be moved to the sites of the intermediate and lower guard gates.

The skeletons for the intermediate gates in both chambers of the upper lock at Gatun have been brought to full height and the bridge will shortly be moved to the sites of the lower main gates. The force at Gatun has been placing an average of four stories of gate skeletons a day, one story on each leaf. A story, or section, is about 65 feet long, from 3 feet to 5 feet in height, varying with the distance above the base, and contains, on an average, about 10,000 pounds of metal. A second double-span erection bridge, for use at Gatun in the lower lock, was shipped from Baltimore on February 27, and will probably be installed by April 1. During February, 3,186 tons of metal were placed in the gates under erection at Gatun and Pedro Miguel, making the total now in place about 10,000 tons, out of a total of 57,000 tons.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 81 per cent. completed, 186,549 cubic yards, out of a total of 225,000, having been placed at the close of work on March 2. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
February 26	504	16.00	2
February 27	477	16.00	2
February 28	392	16.00	2
February 29	384	16.00	2
March 1	412	16.00	2
March 2	312	16.00	2
Total	2,481	96.00	2
Previously reported	184,068		
Grand total	186,549		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending March 2, follows:

DATE.	Hours worked.	Cubic Yards.
February 26	4.20	1,832
February 27	3.15	1,910
February 28	3.30	1,804
February 29	3.15	1,834
March 1	3.15	1,860
March 2	3.35	1,898
Total	21.10	11,138

Ancon Crusher.

DATE.	Hours worked.	Cubic Yards.
February 26	7.00	2,022
February 27	6.40	3,038
February 28	6.15	2,302
February 29	8.20	3,172
March 1	14.25	5,158
March 2	15.00	4,910
Total	57.40	20,602

Replacing Flues In Locomotives.

The American locomotives purchased in 1906 for the Canal work, and in continuous service since, are requiring renewal of their flues. Two hundred and two new flues were put in during the calendar year 1909, 1,636 in 1910, 11,744 in 1911. In the period November 1, 1911, to January 24, 1912, there were renewed 6,472 flues, or which 3,429 were renewed beween January 1 and 24.

Tourist Trade.

The quarantine officer at the port of Colon reports 4,249 persons landed at that port in February "in transit." In January 2,261 persons in this class were landed. In the year 1911 there were 18,577 transit passengers. This classification does not include passengers destined for the Pacific coast, but does include persons coming to Panama on business, such as commercial travelers. Almost all so classed are tourists.

CONCRETE WORK IN THE LOCKS.

Over 80 per cent of the concrete for the locks is in place, the amount at the close of work on March 2 being 3,364,015 cubic yards, out of a total of approximately 4,199,400. A total of 32,092½ cubic yards of concrete was laid in the locks during the week ending March 2.

GATUN LOCKS.

Over 91 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on March 2 being 1,830,151 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending March 2, and of the total follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
February 26	1,228	19.15	5	112	1.40	1	....	1,379½
February 27	1,210	20.02	6	760	8.40	2	....	2,013
February 28	1,126	21.16	5	300	4.40	2	....	1,479
February 29	1,214	20.32	5	184	2.40	1	....	1,456
March 1	1,096	19.08	6	198	2.40	1	....	1,332
March 2	1,368	20.58	6	220	3.40	1	....	1,646
*Portable mixers	....	....	......	289½	....	......	....	....
Total	7,242	121.11	5.5	2,063½	24.00	1.3	....	9,305½
Previously reported	....	....	......	....	....	......	....	1,820,845½
Grand total	....	....	......	....	....	......	....	1,830,151

*The 289½ yards shown for the portable mixers (of which 164½ yards are reinforced concrete) were placed on the following days: February 26th, 39½; February 27th, 43; February 28th, 53; February 29th, 58; March 1st, 38; March 2nd, 58.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 97 per cent completed, 819,465 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on March 2. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
February 26	280	8.50	2	202	21.50	4	....	482
February 27	200	6.00	2	292	31.50	5	....	492
February 28	316	9.50	2	224	25.83	4	....	540
February 29	382	11.50	2	130	20.00	3	....	512
March 1	446	13.50	2	100	11.50	3	....	546
March 2	188	5.50	2	94	8.50	2	....	282
Totals	1,312	54.50	2	1,042	118.83	3.5	....	2,854
Previously reported	....	....	......	....	....	......	4,423	816,611
Grand total	....	....	......	....	....	......	4,423	819,465

MIRAFLORES LOCKS.

Over 52 per cent of the concrete for the system of two twin locks at Miraflores was in place on March 2, the total amount on that date being 714,399 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Feb. 26	2,440	61.00	8	452	6.75	2	534	36.25	6	....	3,426
Feb. 27	2,418	61.00	8	722	12.00	2	582	43.75	7	....	3,722
Feb. 28	1,996	49.00	8	648	10.00	2	397	29.25	6	....	3,041
Feb. 29	2,540	58.25	8	598	8.67	2	427	27.75	5	....	3,565
March 1	2,042	50.32	8	556	9.75	2	379	27.67	6	....	2,977
March 2	2,190	46.67	8	620	9.00	2	393	29.27	5	....	3,203
Total	13,626	326.24	8	3,596	56.17	2	2,712	193.94	5.83	....	19,934
Previously reported	....	....	......	....	....	......	....	....	......	3,693	694,465
Grand total	....	....	......	....	....	......	....	....	......	3,693	714,399

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

At the meeting of the Cristobal Woman's Club on Wednesday, February 21, the art and literature department presented a program, "An Afternoon with Grieg." Mrs. Frank Ullrich read a paper on the composer, illustrated with piano selections from the "Peer Gynt Suite" and others of his works; a quartette sang two numbers from his compositions, and Grieg's "Ave Maria Stella" and "Ich liebe Dich" were sung by Mrs. Diers.

The Paraiso Woman's Club will celebrate the centenary of Charles Dickens at its meeting on Wednesday, March 6. The program will consist of a paper on Dickens, and readings from his works.

The Gatun Woman's Club gave a tea and entertainment in the clubhouse on Thursday afternoon, February 29, for the benefit of the Federation blind boy fund. The concert hall was divided by screens into an attractive tea room and tables seating four were decorated with flowers. Tea, sandwiches, olives, and cake were served for twenty-five cents. During the afternoon the following program was rendered: Selection for piano, "Humoresque," Dvorak, by Miss Florence Neville; Japanese dance in costume by Miss Ritchie Teese; songs by Mrs. T. W. McFarland, recitation by Miss Miriam Stevens. This is the second in the series of entertainments by the federated clubs for this fund; the first having been a cake sale held by the Empire Woman's Club in February. The Empire club will hold a second sale, and the Paraiso and Cristobal clubs are planning entertainments. There have been generous responses to the efforts of the clubs in this behalf. The committee for the centralization of the effort, with Mrs. A. O. Herman as chairman, met at Gorgona on Monday afternoon, February 26, for the purpose of discussing ways and means and organizing a general plan for outside work. Several private subscriptions have been made. Three hundred dollars were pledged by the Federation at the annual meeting in January.

Church Work.

At a meeting of the Woman's Altar Guild of St. Luke's Hospital Chapel, Ancon, at the home of Mrs. Charles F. Mason on February 19, $50 was pledged as the Easter offering for the extension of mission work in the Canal Zone. The guild had as its guest Miss Anne Rhodes of the New York State Federation of Women's Clubs, who was a visitor to the Isthmus. The weekly meetings of the guild were begun on Tuesday morning, February 27, at the home of Mrs. J. P. Fyffe. In accordance with a custom established two years ago a regular tariff of fines will be imposed for tardiness and for absence from these meetings.

During Lent the regular schedule of services will be maintained at Christ Church, Colon. There will be service at St. Mary's Church, Empire, on Friday evenings at 7.30; services at St. Luke's Church, Ancon, will be on Sundays as usual and on Wednesday and Friday mornings. The Rev. W. H. Decker, priest in charge of St. Andrew's Church, Empire, and the adjacent missions, is on his annual visit to the mission at Darien in the interests of the Protestant Episcopal Church.

The Rev. R. H. Boyd of Nashville, Tenn., general secretary of the home missions board of the National Baptist Convention, was a visitor to the Isthmus last week in the interests of the mission here. During his visit he held services in the three churches located at Panama, Guachapali district, at Pedro Miguel and at Empire. The National Baptist Convention established work here in 1908. There are about 500 regular members of the mission.

Mr. James Hayter, agent for the American Bible Society for Central America and Panama, was a recent visitor to the Isthmus, his object being to look over the work being done by the local agents. The Rev. Charles W. Ports, of Panama has been the subagent for the society up to the present time, but Mr. Port's work as missionary in charge of the Spanish section of the work of the Methodist Episcopal Church, as well as his duties in connection with the Methodist college, made it impossible for him to give to the Bible work all the time necessary. To supply the special need, therefore, the Society appointed Mr. William Cocking, late of Honduras, in charge of Panama and the Canal Zone, and a certain section lying north of the mountains in Colombia. During the year 1910–1911, the American Bible Society circulated 4,335 books in Panama and the Canal Zone.

The Very Rev. Father Gorman, missioner of the St. Vincentian Fathers of Philadelphia, was on the Isthmus during February holding missions in Empire and in Gorgona. From February 3 to February 18, the missions were held daily at St. Ferdinand's Church, Empire, and the week following at St. Categan's Church, Gorgona. At the close of his mission in Gorgona, Father Gorman delivered a lecture on the attitude of the church toward socialism.

The Catholic Club of Gorgona, an organization of 70 members, will celebrate St. Patrick's Day on March 17 with a banquet at the Commission hotel. The Rev. Father McCarthy, one of the priests in charge of St. Categan's, will be the speaker.

Ladies' Auxiliary to Spanish War Veterans.

A Ladies' Auxiliary to Chagres Camp No. 2, United Spanish War Veterans, is being formed, and a meeting of the charter members will be held at the Empire lodge hall on Sunday, March 10, at 3 p. m., for the purpose of closing the charter list. All eligibles are requested to attend. All female relatives over 14 years of age of a veteran of the Spanish-American war, the Philippine insurrection, and the China relief expedition, who served between the outbreak of the war and July 4, 1902, whether the veteran is a member of any military organization or not, and any women who were connected with the Army, during the same period, as nurses, etc., are eligible to membership.

A. A. O. N. M. S.

The second annual banquet of the Panama Shriners' Club and their ladies will be held at the Washington Hotel, Colon, on Saturday evening, March 9.

A special train will be operated on the following schedule: Leave Panama 7.00 p. m., Corozal 7.05, Pedro Miguel 7.12, Culebra 7.23, Empire 7.27, Las Cascadas 7.31, Bas Obispo 7.35, Gorgona 7.44, Gatun 8.33, arriving at Colon at 8.47. Returning leave Colon, 12.30 a. m., making all of above stops.

I. B. E. W.

At the meeting of Local Union No. 677, Independent Brotherhood of Electrical Workers, to be held in the lodge hall at Gatun on Sunday afternoon, March 10 at 2.30 o'clock, J. J. Porter will lecture on "Transmission Line Calculation." Business of special importance will be given consideration. Refreshments will be served.

Obituary.

S. C. Cole died at Ancon Hospital on February 27 after a month's illness. He had been employed in the Central Division, was 54 years of age, and had lived on the Isthmus five years. He was unmarried.

F. R. Longtin, an American employe of the Isthmian Canal Commission, died at Ancon Hospital on March 1, of traumatism resulting from successive accidents, the last of which occurred on February 29. He was 29 years of age and unmarried.

Army and Navy Union.

The body of Simon C. Cole will be interred at Ancon on Sunday morning, March 10, after the arrival of the first train. He was a member of the Army and Navy Union, and all his comrades and his friends are invited to attend the interment ceremonies.

Missing Man.

His sister requests information about the present address of R. C. Cartwell or Cartmell of Decatur, Ill. Replies should be sent to the Director of Posts, Ancon.

Postage Stamps Commemorative of the Canal Opening.

The Post Office Department has decided to issue a series of postage stamps commemorative of the opening of the Panama Canal, and to this end has requested the assistance of the Commission in preparing suitable designs. The stamps will be in four denominations, one, two, five, and ten cents.

PERSONAL.

Mr. Joseph Pennell, the American artist, after spending several days on the Canal Zone in obtaining material for pictures of the Canal work to be published later in *The Century Magazine*, sailed for San Francisco on the *City of Sydney* on February 26.

Admiral Theodore F. Jewell and Mrs. Jewell, Admiral Thomas O. Selfridge, Admiral C. M. Chester, and Brig. Gen. Charles S. Smith arrived from New York on the *Cristobal* on February 22.

The second lecture in the second series of free illustrated lectures for the people of Colon was given in the conversorium on Thursday evening, February 29. The lecture was in Spanish, by Dr. da Costa Gomez, his subject being "The Fly as a Carrier of Disease." The lectures are given on the last Thursday evening in each month. They are in English and Spanish. Each lecture is illustrated with lantern slides.

The Orchid Chapter, No. 1, Order of the Eastern Star, has received its charter from the Grand Chapter. The meetings of the chapter are held in the lodge hall, Gorgona, on the second Saturday evening in each month. The chapter was organized on October 25, 1911, with 42 charter members. There is now a membership of 56.

Lost—Canal Medal No. 4,440, while owner was at work at Miraflores. Return to D. Morgan, Box No. 1, Pedro Miguel.

Lost—In washroom, second floor of Cristobal clubhouse, on the morning of February 22, man's gold ring, with reconstructed ruby. Reward for return to R. B. Irwin, House 116, Culebra.

TRACKS OF LOCK TOWING SYSTEM.

Placing of Rack Tracks and Conductor Rails.

Work is advancing upon the locomotive tracks at both the Gatun and the Pedro Miguel Locks. The tracks are to carry the electric locomotives which control the movement of vessels through the locks. It is necessary that each lock chamber be equipped with a towing track and return upon either side, which requires seven complete tracks at each of the locks—a towing and a return track upon each side wall, and a pair of towing tracks and a common return track upon the center wall. All tracks extend the entire length of the lock walls and are provided with crossovers at both ends. The lines of the towing locomotives (see descriptive article in THE CANAL RECORD of September 27, 1911), are fastened to the vessel in either the upper or lower forebay, and the locomotive then begins its travel, continuing at the rate of 2 miles an hour the entire length of the towing tracks. At the end of the run the locomotive is transferred over the crossovers to the return track, upon which the return trip is made at the rate of 5 miles an hour.

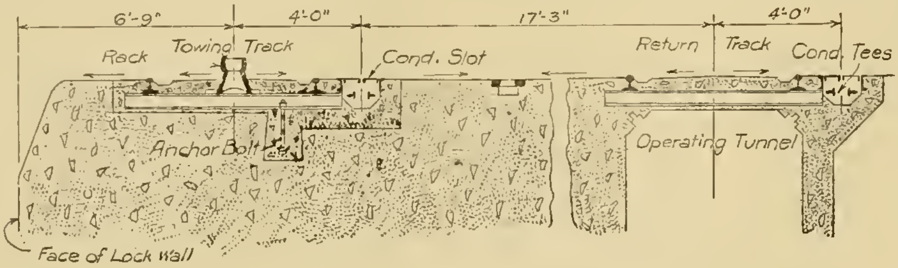


FIG 1.

SECTION OF LOCK SIDE WALL SHOWING GENERAL FEATURES OF TOWING AND RETURN TRACKS.

In comparison with ordinary first-class railway construction, the locomotive trackage of the locks is unique. In point of durability, the system has no superior. The foundation is of concrete; the ties are of steel; the rails are heavy-weight— 90 pounds to the yard; and, in addition, there is a rack for the towing track, a conductor slot housing a pair of electric rails for both the towing and the return track, and a complete drainage of surface, rack, rail gutters, and slot.

The installation of the track is adapted to the ever varying features of the masonry construction. The towing track, which is subjected to the heavier duty, is in general supported upon the massive concrete adjacent to the edge of the lock chamber, a continuous, wide groove, 12 inches deep being left in the initial masonry as space for the erection of the track. The towing track is provided with heavy anchor bolts at each tie (spaced on three-foot centers) imbedded two and one-half feet in the concrete. Such anchoring is essential in order to provide against an up-pull of the thrust wheels on the locomotive acting against the rack, the thrust being possible in case of extraordinary side-pull of the towing lines, tending to overturn the locomotive. The return track is of somewhat lighter construction and, in general, is supported directly above the operating tunnels of the lock walls. The typical tie spacing upon the return track is 3 feet 9 inches, instead of three feet, as for the towing track. The tracks contain both vertical curves between lock levels and horizontal curves at offsets, the former constructed on a 100-foot radius, and the latter on a 200-foot radius. Other special constructions are found at the cantilever decking over the indented recesses for miter gates, at the different crossovers, at the emergency dam inclines, at chain fender rooms, at intake and discharge valve rooms, and at a few manholes and cable shafts.

The accompanying illustration (Fig. 1) shows a typical cross-section of the towing and return track as installed. The towing track is situated 6 feet 9 inches to center line from the edge of the lock chamber and rests upon the solid masonry of the gravity section of the lock wall. In this masonry, a channel twelve inches deep and a dove-tailed groove are left until the track and anchors have been set, when the concrete is carried up to final elevation, and the track and anchors thoroughly imbedded.

The track material is furnished under contract; the ties, rack, and rails are drilled ready for connecting. In the field the ties are spaced out and the rails are spliced and bolted to the ties, as is also one side channel of the conductor slot; the rack is also bolted in position. The entire track is aligned and leveled, and the concrete cast, graded, and finished for proper drainage.

The surface of the concrete is sloped from the rack at the center of tracks to rail gutters on either side, which gutters are sloped longitudinally to frequent outlets. At every outlet a special cast-iron drain pipe, two inches in diameter, carries the water from each rail gutter and from underneath the rack to a sump situated at the bottom of the conductor slot on one side of the track. A four-inch drain pipe connects the conductor slot sump to a large drainage tunnel located underneath the duct space of the operating tunnel fourteen feet below the coping; other drains have a discharge at the conductor slot sump. This construction is varied to suit different requirements of center wall return track, as well as other conditions. The finished appearance of the track is very trim, a relatively small portion of the rail being exposed to view and to the action of the elements in a tropical climate.

A rack (Fig. 2) for supplying the requisite traction is placed upon the center-line of each towing track, as ordinary friction between wheels and rail is not sufficient for the maximum towing pull. The rack is of cast steel and of peculiar section, designed for the double purpose of engaging the driving cog of the locomotive and also a pair of horizontal thrust wheels, the function of which is to prevent overtipping of the locomotive in event of an excessive side-pull of the tow-line. The pitch of the rack teeth is 3.13 inches, and each rack section is cast in lengths of six feet, which is double tie-spacing. The sections are bolted together longitudinally and also bolted to each tie.

The ties are a rolled steel of modified I section, 5½ inches high with a top base of 8 inches and a lower base of 4½ inches. In railway work, it is common practice to install the larger base of the tie on the lower side to obtain a better bearing value. With a rail imbedded in the concrete, the bearing value is of smaller importance, and the ties for the towing track are installed with the larger base up in order to furnish more space for bolting the rack to the ties.

A conductor slot is provided on the off-tow side of each track as a means of supplying electrical energy to the locomotive, which operates on a 3-phase circuit at twenty-five cycles and 220 volts. Two of the phases are carried through the conductor slot, whereas the third phase is connected to the two running rails and grounded. The two conductors in the conductor slot are of T-section and supported by clamp insulators from malleable iron brackets. For the towing tracks, the T-conductors are manufactured from copper ingots by the extrusion process, as considerable current-carrying capacity is necessary; for the return track, rolled steel T's are used as conductors. The conductor slot proper is 14 inches wide by 11 inches to 14 inches deep, the depth varying in order to slope toward the drainage sumps. The upper corners of the conductor slot are protected by five-inch channels imbedded and anchored into the concrete. Rolled steel, checkered plates, in sections 30 feet long, cover the slot, resting upon frequently spaced brackets. A pair of contact plows, which bear against the flat side of each conductor rail and are attached to the locomotive, transmit the current from the conductors to the locomotive motors.

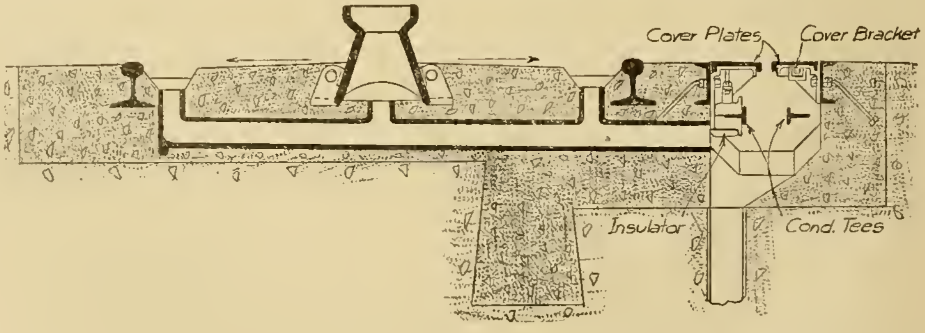


FIG 2.

LARGE SCALE SECTION OF TOWING TRACK SHOWING DETAILS OF RACK, CONDUCTOR SLOT AND DRAINS.

HEATED AREAS IN CULEBRA CUT.

Phenomenon Explained by the Commission Geologist.

Under date of February 12 the Division Engineer of the Central Division reported as follows regarding heated material on the west side of Culebra Cut at Culebra:

> A little less than three weeks ago I noticed that the material at the locality described, which consisted of stratified, sedimentary rock, among which there appeared some lignite of a low grade, was sending up in the early morning quite a thick cloud of white steam or vapor. I examined the spot a day or two afterwards and found that for a width of about 20 feet, length of about 100 feet and a depth of about 15 feet, the entire mass of material recently blasted appeared to be heated to a considerable temperature. Steam was escaping from numerous small openings and from four principal vents, or openings; the smallest of the four being about three inches in diameter and the largest about one foot. The temperature was so high that the hand could not be held at the mouth of the larger openings for more than a second or two, and when withdrawn was quite moist, showing quite unmistakably the presence of steam or heated vapor. The sides of two of the vents were encrusted both with white and yellow powdered material, the yellow appearing to be sulphur. What the white powder was I am unable to state.
>
> I have observed this locality almost daily for over two weeks, and within the past four or five days there has been quite a change in two important characteristics. The temperature has increased and a pale blue smoke, instead of steam, is now emerging from the vents. The odor of sulphuric acid, which was very marked when only steam was emerging, is fully as marked today. To give an idea of the temperature of the larger vent I took a nine-inch brown Manila envelope and held it at the mouth of the largest vent for three seconds, when it was totally destroyed although did not ignite in flame. I then took a piece of the white pine covering of a dynamite box and held it for three minutes within the mouth of the largest vent and on withdrawing it, it was completely charred, so that another three or four minutes exposure would probably have carbonized it completely. * * * * *
>
> I would respectfully recommend that the Commission Geologist be requested to make a careful examination and submit, as promptly as possible, a report on this matter, as it is one of great interest to the work and undoubtedly concerns the safety of our men who are handling dynamite. As you may recall, we have had premature explosions in the past on at least two occasions due to chemical heating of the rock, and I am convinced that the material which I have described was hot enough to have readily fired dynamite at any time within the past three weeks.

REPORT OF THE GEOLOGIST.

In accordance with the above recommendation the Commission Geologist, D. F. MacDonald, made an investigation and has submitted the following report:

The marl shales, through which Culebra Cut extends, in the region opposite the Culebra railway station, have, from time to time, on exposure to the atmosphere, become hot. The intensity of this heat has varied from noticeably warm to a temperature sufficient to readily char wood, without, however, causing it to burst into a flame. The duration of this heating has been from a few days to several weeks. These shales are dark, thin bedded, soft, and easily crumbled, and some of the layers are largely fine basic tuff, or volcanic ash, loosely cemented by lime. Other beds contain more carbonaceous material, with some local partings of lignite, an inch to a foot or more thick. The most easily weathered minerals of which these rocks are composed have been but little acted on by the atmosphere, and this, together with their composition, is evidence that they were derived from nearby volcanic mountains, and deposited as a succession of thin beds in a shallow estuary of the sea, which extended across the Isthmus at that time. That this material was originally deposited in water is known from its clearly stratified condition; that the water was shallow is evidenced by fragments of fossil plants and thin beds of lignitic shale, indicating swamp conditions, which are interbedded in it; and that the water was an arm of the sea is demonstrated by the fossilized marine animals, such as oysters, corals, pelecyods, and foraminifera, which it contains. The time when these conditions existed is known in geology as the early Tertiary or Oligocene period of earth history, and the fossilized animals of that period have certain specific marks, by which the specialist may distinguish them from animals of earlier and of later time.

After exposure to the atmosphere by drilling, or blasting, certain local areas of this formation become, in the course of a few days, warmed up, and as the heating goes on the carbonaceous matter in the shales is gradually oxidized off and they tend to assume a gray to dull reddish color. The first working hypothesis entertained, in looking toward a solution of this heating phenomenon, was that possibly the heavy blasting had furnished heat enough to break down the calcium carbonate present to the oxide form, and that ground water and atmospheric moisture reacted on this to slake it and thus probably generate sufficient heat to start the oxidation of the carbonaceous material. This hypothesis was, however, rendered untenable by three lines of evidence:

(1) The heating was much more local than the calcium carbonate, and the carbonaceous matter.

(2) The heating bore no definite relation to the lime and carbon content of particular beds.

(3) Colonel Gaillard has observed that in some instances the heating began in the holes some time after they had been drilled, but before the ground had been blasted at all.

Another line of inquiry was suggested by finding a small amount of pyrite in some of the beds which were heating. It was suspected that this, through its oxidation, was a factor in furnishing the initial heat of the action. In April, 1911, samples of the beds then heating were sent to the chemical laboratory of the United States Geological Survey with instruction to make qualitative tests for sulphur and other products that might serve, through oxidation, as the mainspring of the action. These tests revealed the presence of sulphuric acid to the amount of 1.92 per cent, also minute crystals of gypsum. This confirmed the hypothesis that pointed to the pyrite present as the substance acted on by atmospheric oxygen to develop the initial heat.

The most aggravated case of heating so far noted is now going on in Culebra Cut, about 350 yards north of the foot of the stairs at the observation tower near Culebra Station. The mass of heated ground here is about 500 feet long by 20 feet wide, and the action reaches a depth of perhaps 15 or 20 feet. Blue smoke, which contains a high percentage of sulphur dioxide, issues from vents in the mass, and fragments of wood inserted in these are readily charred and consumed. A small amount of steam may also be detected emanating from local moist spots, but this is mainly due to the vaporization of ground water. In the investigation of this heated mass samples were taken, and these were tested qualitatively for sulphuric acid and for sulphates of calcium, aluminium and magnesium. The tests were made by Mr. Jacob of the Hospital Laboratory Staff at Ancon, and they revealed the presence of all of the above substances, both in the shale and as the white coating on the moist spots and steam vents of the mass. The yellow deposit near the larger vents is sulphur. Sulphuric acid, especially, was shown to be present in considerable quantity. The origin of the sulphuric acid here was at first a puzzle, because the examination of many samples, with the naked eye and with the microscope, failed to reveal the presence of pyrite. Finally samples of eight to ten pounds were taken, ground with water in a large mortar for some minutes, and then concentrated to a few ounces by washing or "panning." This concentrate showed a high content of pyrite, much of which could scarcely be seen with the naked eye. Under the microscope very small crystals of pyrite were noted; also considerable magnetite, present as black sand, and some sub-angular to fairly rounded grains of quartz.

The mainspring of the action here, then, as in the other instances observed, has undoubtedly been the oxidation of the pyrite. The reasons why this oxidation has been so rapid and effective, seem to be as follows:

(*a*) The finely divided, almost microscopic, character of the pyrite gives maximum surface exposure to atmospheric agencies and greatly promotes oxidation.

(*b*) The very warm, moist atmosphere. The tropical sun shining directly on dark rock surfaces produces a temperature sufficiently high to greatly promote oxidation, especially in the presence of slight moisture.

(*c*) Once oxidation of the pyrite has been started the heat thus generated tends to accelerate chemical action and thus the heating increases in geometric progression.

(*d*) When the heat of pyrite oxidation reaches the comparatively low temperature of oxidation of the hydrocarbons present in the lignitic shale, they, too, become oxidized and still further add to the temperature. Finally the fixed carbon content tends to become oxidized, at least in part, and gives maximum intensity to the action.

(*e*) Some heat is also generated by the action of the free sulphuric acid on the calcium carbonate for the formation of gypsum. Other minor chemical actions added their quota to the total heat.

As the temperature rises all chemical activity is vastly stimulated and the heating increases to a maximum. After the most readily oxidizable substances are consumed the heat gradually dies down toward normal temperatures, which may be reached in a few weeks or months. The intensity and duration of the heat depend largely upon the percentage of finely divided pyrite, volatile matter, and fixed carbon in the rocks.

In order to alleviate the danger of premature explosion from loading dynamite in holes which have become hot, Colonel Gaillard has inaugurated the practice of testing holes in the vicinity of the heating areas, by dropping into them a small iron pipe longer than the hole. This is withdrawn at the end of ten minutes and quickly passed through the hand. In this way not only is heating detected but the location of the heated zone with respect to the depth of the hole is also made known; for the heating is at times only local and may be at, or well above, the bottom of the hole.

Certain geological considerations have been suggested by a study of this heating phenomenon, the chief of which are:

(*a*) Chemico-thermal springs. Whenever jointing, fissuring, or change of groundwater level gives free access of oxygen-bearing surface waters to beds which contain the necessary finely divided pyrite and carbonaceous matter, a heating up of such beds is likely to result. Groundwater flowing over such heated beds, and coming to the surface in the general vicinity of them, would constitute thermal, or hot, springs.

(*b*) The very fine pyrite sparingly disseminated through the carbonaceous shales, herein described, seems to have resulted from the action of sulphur from decaying animal and vegetable life on the ferro-magnesian silicate fragments which are abundant in these sediments.

D. F. MACDONALD,
Commission Geologist.

Misdirected Letters.

ANCON, C. Z., March 2, 1912.

Adams, George
Bergquist, Simon
Castro, Miss M.
Chadbourne, Paul H.
Church, Mr. L. T.
Christee, C. D.
Cochran, R. J.
Enos, Fred
Gains, Mrs. N. V.
Gardener, H. B.
Good, Miss Emily (2)
Greene, Alfred
Halamarda, Alexander
Hall, Miss Marie
Hines, Wm. P.
Johnson, Olaf
Kenly, Maj. W. L.
Lindsey, Vincent
Lucky, A. A.
Lueinghoener, Albert
MacCormack, Leo
McDonald, H. M.
McConnell, W, G.
McLaney, Wood
Mahurin, Mrs. E.
Marqare, Deoneseo
Marshall, John
Moore, Judson
Newhard, Carson, E.
Norton, J. Cristobal
Orginos, Casilio
Ottey, John
Reese, Mrs. George
Robinson, David
Schoenblum, Herbert B.
Sneider&Passidena, Messrs.
Sterlings, Samuel
Thompson, Howe
Toney, Georgiana
Tredinnick, J. P.
Van Den Berg, Harry
Von Beck, Henry C.
Vittitow, Mrs. H. T.
Welfare, Albert
Wilson, Henry
Yertue, W. L.

LETTERS PREVIOUSLY UNCALLED FOR

Burhey, Miss L. M.
Boetz, Walter L. M.
Baldwin, Ernest
Brown, Miss I.
Connell, Mrs. Elizabeth
Clark, Thos. H.
Cook, Mrs. Robt.
Campbell, Leon V.
Davy, Esward
Dufree, Oscar
Dogue, Anselme
Ferguson, Noland
Fraser, Charles
Ferguson, Chas. Jr.
Griset, Leon E.
Geist, Fred
Gurtchell, Mrs. C. R.
Hawley, H. L.
Harper, Robt.
Hiscock, H. P.
Hinnershitz, Chas. W.
Hagary, John
Kunz, Henry
Kendal, Clifford
Keegan, John J.
Lewis, Henry W.
MacCulloch, Robert G. Jr.
McDevitt, John F.
McCormick, E. P.
McCormack, Leo
McCubbins, Clyde, R.
Millikan, R. T.
Mertz, J. W. (Merty)
Martinez, Anelmo
Miller, Wm.
Moore, Elmer R. Esq.
Ossa, M. J.
Purdy, George F.
Parker, Warren N.
Padgett, Mnoroe
Rhoden, Ernest
Rideout, Edward
Small, Evan
Schofield, Harry
Senhauser, A. J.
Tinayi, J.
Tedford, Wallace
Tinsley, R. B.
Thomas, Emmett
Wenzel, Mrs. Edd.
Worn, J. J.
Wilson, Mrs. Sarah

Rainfall from February 1 to 29, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
*Ancon	.06	15	.08
Balboa	.14	15	.18
*Miraflores	.30	15	.34
Pedro Miguel	.19	15	.22
Rio Grande	.14	15	.33
Central Section—			
Culebra	.21	15	.33
*Camacho	.50	15	.65
Empire	.28	15	.34
Gamboa	.96	15	1.11
*Juan Mina	.51	15	.90
Alhajuela	.18	7	.33
*El Vigia	.30	15	.62
*Gorgona	.24	15	.35
Frijoles	1.29	15	3.01
*Trinidad	.23	15	1.15
*Monte Lirio	.57	16	3.32
Atlantic Section—			
Gatun	.72	15	2.38
*Brazos Brook	.47	15	2.26
Colon	.51	7	1.81
Porto Bello	.57	9	1.64

*Standard rain gauge—readings at 5 p. m., daily. Automatic rain gauge at unstarred stations—values midnight to midnight.

EXAMINATIONS AND EMPLOYMENT.

Privileges to Panama Railroad Employes—Notices of Examinations.

It was announced in THE CANAL RECORD of December 27, 1911, that the United States Civil Service Commission had ruled that any employe of the Isthmian Canal Commission who might wish to compete for positions in the Apportioned Service at Washington might be examined in his home state during his annual vacation, and that a special examination would be authorized if the regular examination were not scheduled to be held during the limited period of the applicant's leave of absence.

The United States Civil Service Commission has subsequently ruled that the same privilege may be extended to employes of the Panama Railroad Company.

It is to be noted that examinations held in the Canal Zone for appointment to the Departmental Service are for the nonapportioned service, *i. e.*, appointment, or station, in the United States outside of Washington, D. C., as under the law examinations can not be given in the Canal Zone for appointment in the apportioned service in Washington, D. C.

Civil Service Examinations.

The following named examinations will be held beginning probably about the second Sunday in April: Agricultural Inspector, Philippine Service; cadet engineer, cadet officer, Lighthouse Service; civil engineer, civil engineer and draftsman, Departmental Service; mechanical draftsman, topographic draftsman, Isthmian Canal Service; engineer, Indian Service; farmer, Indian Service; fish culturist, Departmental Service; junior engineer (civil), junior engineer (mechanical or electrical), Engineer Department at Large; pharmacist, Public Health and Marine-Hospital Service; scientific assistant, Departmental Service; surveyor, Philippine Service; teacher, Indian Service; and trained nurse, Indian, Isthmian Canal, and Philippine Services.

Women will be admitted to the examinations for teacher, Indian Service, and trained nurse, and women only will be admitted to the examination for trained nurse, Philippine Service.

A special announcement has been issued in regard to the scientific assistant, Department of Agriculture, examination, a copy of which will be sent on request. The announcement should be returned to this office as early as possible, as the supply is limited.

Applications for the above-named examinations will not be received in this office after the close of business on March 25; this date may be changed it it is deemed advisable to do so.

In requesting application blanks the exact title of the examination desired should be stated. In filing applications the date of examination should be *omitted*. In answering questions in regard to bona fide residence, such residence must be shown in a State or Territory of the United States, and county thereof, *up to the time of filing application.*

Note—"Departmental Service" refers to the nonapportioned Departmental Service, *i. e.*, for appointment in the United States outside of Washington, D. C.; examinations cannot be given in the Canal Zone for appointment in the apportioned Departmental Service, *i. e.*, for appointment in Washington, D. C.

JOHN K. BAXTER,
Secretary, Isthmian Civil Service Board.

Qualifications of Teachers.

The following, from a circular issued by the Division of Schools, is published for the information of persons intending to apply for a position as teacher in the Canal Zone schools: "Examinations for teachers are not required. No applicant will be considered who is not an American citizen, who is more than forty-five years of age, who has not completed a certified high-school course, who has not had two years' normal or college training, and two years' successful experience, certified to by at least two persons engaged in educational work. Letters of recommendation should be sent direct and not through the applicant."

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on March 13. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m. on March 13, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

Wood Car Repairers Needed.

About ten wood car repairers are needed in the Mechanical Division at Gorgona Shops. The pay of this position is fifty-six cents an hour. All persons who are competent wood car repairers and desire employment in or transfer to this position should apply at once to the Superintendent of the Mechanical Division, Gorgona Shops, Gorgona, Canal Zone.

WEATHER CONDITIONS, CANAL ZONE, FEBRUARY, 1912.

The weather for the month was characterized by a general deficiency in rainfall, atmospheric pressure and relative humidity, and an excess in air temperature and wind movement.

The rainfall was below normal at all stations except Gamboa and Colon, but was not the lightest of record for the month of February.

Steady north and northwest winds prevailed during the month, and the total movement was well above normal at all stations except Colon.

There was a further decrease in night fogginess.

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.	Date.		Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon.	29.892	80.8	88	Feb. 27	1	Feb. 10	82	1.81	1.47	15	10,006	N.	32	N.	Feb. 8
Culebra	29.874	79.2	91	Feb. 10	65	Feb. 2	84	.33	.56	4	7,564	N.W.	30	N.W.	Feb. 24
Ancon	29.857	81.3	94	Feb. 19	66	Feb. 1	82	.08	.86	2	7,705	N.W.	29	N.W.	Feb. 23

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

F. B. Shipp, Executive Secretary of the International Committee of the Young Men's Christian Association, made a four days' visit to the Isthmus last week. Mr. Shipp visited the clubhouses and conferred with secretaries and Isthmian Canal Commission officials concerning present and future Y. M. C. A. work on the Isthmus.

ISTHMIAN INDOOR BASEBALL LEAGUE.

The following is the standing of the teams of the Isthmian Indoor Baseball League on March 2, 1912.:

	Played.	Won.	Lost.	P. C.
Gorgona	1	1	0	1.000
Cristobal	1	1	0	1.000
Corozal	1	1	0	1.000
Empire	1	0	1	.000
Culebra	1	0	1	.000
Gatun	1	0	1	.000

Games played March 2, 1912: Corozal, 33, Empire 10; Gorgona 15, Culebra 6; Cristobal 19, Gatun 16.

Games to be played March 9, 1912: Cristobal at Empire, Gatun at Gorgona, Corozal at Culebra.

COROZAL

The standing of the seven high men in the local handicap pool tournament is as follows:

Name.	Won.	Lost.	P. C.
Logan	11	1	.917
Kent	8	1	.889
Lofgren	11	2	.846
Tribolet	7	2	.778
Roberts	9	4	.692
Taylor	8	4	.667
Thurgood	5	3	.625

An order for 31 new library books is now being filled in the States.

CULEBRA.

The duckpin bowling series, with 40 entries, closed this week with Silver's team winners, and Mr. Hill will receive a gold medal for the high score of the tournament, the score being 127. The members of the team are Silver, captain, Kleene, Palmer, Tragsdorf, Cornthwaite.

The following are the high duckpin scores for the week: Hobart, 114, 104; Sickler, 100; Dunfey, 111; Wheeler, 105; Tragsdorf, 101.

A Spanish class was organized on Saturday evening to meet Saturdays at 8 o'clock.

The Corozal boys played the Culebra boys at Culebra on Saturday, in the morning at outdoor baseball, and in the afternoon at indoor baseball. In both cases the Culebra boys won.

Cigars and candy at the clubhouse are sold for cash only.

EMPIRE.

One hundred and forty-four games have been bowled in the duck and candle pin bowling tournament now being rolled. In doubles Rodeighiro and Pinney are high with 1,144 pins, Rodeighiro and Gorham, second with 1,139. High single scores—Golsby, 127; Rodeighiro, 126; Gorham, 126. High averages are as follows: Rodeighiro, 144 games, average 93.42; Pinney, 135 games, average 90.51; Gorham, 96 games, average 90.34; Gustaveson, 96 games, average 90.12; Grund, 105 games, average 87.13.

The February handicap pool tournament was won by E. E. Barnes. The March tournament will be started at once.

GORGONA.

Cristobal and Gorgona played a match game of pool and billiards at Gorgona on Saturday night, March 2, with the following results: *Pool*—Cristobal—Pack, 100; Ford, 84; Schlager, 67. Gorgona—Orr, 60; Hill, 100; Montgomery, 100. *Billiards*—Cristobal—Rice, 100. Gorgona—Strong, 79. Total billiards and pool—Cristobal, 351; Gorgona, 339. Empire will send a pool and billiard and a duckpin team to Gorgona on March 9, and Gorgona will send teams to Cristobal on March 16.

The Executive Council of the Gorgona Y. M. C. A., Messrs. Smith, Loughery, Otis, Shady, and March, gave a dinner to the newly appointed committees and to F. B. Shipp, Executive Secretary of the International Committee of the Y. M. C. A., at the I. C. C. hotel on Tuesday night, February 27, at 6.30. Mr. Shipp made an address on the "World Wide Work of the Y. M. C. A."

At 8 o'clock on Tuesday night, February 27, there was a vaudeville smoker and moving picture show at which 315 men were present. Mr. Shipp addressed the men, talking of the work of the Y. M. C. A. on the Canal Zone. Messrs. Emery and Cogan gave a sketch, "On the Road." Messrs. Ross, Dickson, Case, and Kersey, "The Tropical Male Quartette," sang two numbers. Mr. Stapleton of Corozal was contortionist. The Tenth Infantry Orchestra furnished music and L. E. Jones gave several selections on the piano.

Senor Gomez is conducting a class in Spanish for men who work nights, and any others, Tuesday at 10.45 and Saturday at 1.30. There will be a class for ladies, Tuesday at 9.45 a. m., and Saturday at 2.30. Senor Gomez uses the Berlitz method.

GATUN.

The Gatun-Cristobal indoor baseball game scheduled to be played at Gatun on Saturday evening, March 2, was played at Culebra. Result: Cristobal 19, Gatun, 16.

The Gatun Y. M. C. A. Choral Club will give its first concert at Camp Otis, on Sunday evening, March 10. In addition to the chorus, several prominent soloists will sing.

The Discussion Club met on Sunday evening, March 3, under the leadership of Secretary Smith and discussed the subject, "Christian Men in Social Action." The subjects for the rest of this month will be: March 10, "Men and Religion Forward Movement;" March 17, "The Brotherhood Movement;" March 24, "The Young Men's Christian Association;" March 31, "Big Brothers."

Empire Minstrel Club will be at Gatun on or about March 20.

Geo. W. Huttlemire is the winner of the gold medal offered for the highest ten games of duckpins for the month of February. Huttlemire's games were: 117, 112, 111, 100, 109, 108, 107, 107, 106, total 1,094. G. E. Teall was second with 1,061, Barte third with 1,054, Green fourth with 1,043.

H. H. Hodges made a score of 243 in ten pins on Saturday evening, March 2.

CRISTOBAL.

At the session of the Debating Club on February 28, Wm. T. Lum, a Chinese merchant of Colon, gave a descriptive talk on "China, Old and New."

The standing of the Cristobal National Duckpin League was as follows on March 2:

Teams.	Played	Won.	Lost.	P. C.
Reds	6	5	1	.833
Pirates	6	4	2	.666
Phillies	6	4	2	.666
Cardinals	6	3	3	.500
Giants	6	3	3	.500
Dodgers	6	2	4	.333
Doves	6	2	4	.333
Cubs	6	1	5	.166

The following high scores were made on the local bowling alleys during the week ending March 2: Duckpins—Marquez, 107; Herrington, 115, 111; Orr, 105, 101; Barte, 116, 110; Whittles, 100; Jacques, 107; Barrett, 105; Smith, 100, 104; Herring, 100, 112; Russell, 108; Gibson, 103; Hess, 111; French, 101; Schofield, 108; Vandabergh, 101. Candle pins—Gilmore, 103.

February Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Average	Years of Record	Rai'y days 1912
Pacific Section-						
Ancon	.43	2.75	.08	.86	14	2
Balboa	.46	3.22	.18	.57	13	3
Miraflores	2.02	2 43	.34	1.65	4	3
Pedro Miguel	.50	1.40	.22	1.08	5	2
Rio Grande	1.00	.91	.33	.68	8	4
Central Section-						
Culebra	.93	.74	.33	.56	22	4
Camacho	1.39	.69	.65	.82	6	6
Empire	.75	.55	.34	.55	7	4
Gamboa	1.80	.71	1.11	.85	27	5
Juan Mina	......	1.39	.90	1.14	2	8
Alhajuela	2.58	2.29	.33	.79	13	3
El Vigia	2.41	3 19	.62	2.78	4	6
Gorgona	1.79	1.99	.35	.86	8	3
Frijoles	......	......	3.01	......	1	14
Trinidad	5.97	2 00	1.15	2.85	5	16
Monte Lirio	8.93	2.41	3.32	4.35	5	24
Atlantic Sec.-						
Gatun	3 33	2.19	2.38	2.40	8	14
Brazos Brook	3.30	2.03	2.26	2.30	6	16
Colon	3.58	1.81	1.81	1.47	42	15
Porto Bello	5.89	6.90	1.64	4.55	5	13

Sale of Wire Finishing Nails.

OFFICE OF DEPOT QUARTERMASTER,
MOUNT HOPE, C. Z., February 27, 1912.

Sealed bids will be received at the office of the Depot Quartermaster, Mount Hope, Canal Zone, until 2.30 o'clock p. m., March 14, 1912, when they will be opened in the presence of attending bidders, for the following quantities of wire finishing nails:

35,000-lbs. 8d.
60,000-lbs. 10d.

These nails can be seen and examined on any working day between the hours of seven to eleven a. m., and one to five p. m., upon application at this office. Bids may be tendered for any quantity of nails listed. The right is reserved to reject any or all bids or any part of a bid. Bids must be plainly marked "Proposal to Purchase Wire Finishing Nails, to be opened March 14, 1912," and addressed to the Depot Quartermaster, Mount Hope, Canal Zone.

C. NIXON,
Depot Quartermaster.

BASEBALL.

PANAMA CANAL LEAGUE.

RESULT OF GAMES, MARCH 3.

At Empire—Empire, 18; 10th Infantry, 4.
At Ancon—Ancon, 14; Com.-Sub.., 4.

STANDING OF CLUBS.

	P.	W.	L.	P.C.
Ancon	9	7	2	.777
Com. Sub.	8	5	3	.625
Empire	8	4	4	.500
10th In'ty.	9	1	8	.111

SCHEDULE FOR MARCH 10.

At Colon—Com.-Sub. vs. 10th Infantry.
At Ancon—Empire vs. Ancon.

GAME AT EMPIRE, MARCH 3.

Empire.	AB.	H.	PO.	A.	E.
VanZ'dt,lf.	6	3	1	1	0
Clements,rf	5	3	0	0	0
Maguire,1b	5	3	11	0	1
Markley,c.	4	1	8	0	0
Dau'ty,2b.	1	0	3	3	0
*Murphy,cf	5	2	0	0	1
†Bryan,ss.	5	1	4	4	1
Toone,3b.	4	1	0	4	0
Marshall,p.	4	0	0	4	2
Totals	39	14	27	16	5

10th. Inf.	AB.	H.	PO.	A.	E.
Dele'ty,ss.	5	1	1	3	3
Webber,rf.	5	0	0	0	0
Smith,cf.	5	5	0	0	0
Trickey,c.	4	1	13	1	2
Laugner,lf.	5	1	0	0	0
Skeris,3b.	4	0	2	2	2
Duff,p.	2	0	1	1	1
Lucas,p.	2	0	0	2	0
Saluski,2b.	1	1	0	1	2
Cassady,1b	1	0	0	0	0
Car'ter,1b.	4	0	7	0	1
Totals	38	9	24	10	11

Empire	5	0	6	0	1	0	6	0	x—18
Tenth Infantry	0	1	0	0	2	0	0	0	1— 4

Runs—Empire: Van Zandt (3), Clements (4), Maguire, (2), Markley (2), Daugherty (2), Murphy (3), Toone, Marshall; Iinfantry: Delehanty, Smith (2), Duff. Earned runs—Empire 6, Infantry 2. Two-base hits—Maguire. Three-base hits—Murphy. Home runs—Murphy, Van Zandt, Maguire, Smith. Sacrifice hits—Daugherty. Wild pitch—Lucas. Stolen bases—Clements 2, Maguire, Bryan, Toone, Marshall, Smith 3, Delehanty. First base on errors—Empire 8, Infantry 4. Base on balls—off Marshall 3, off Lucas 4. Struck out—by Marshall 8, by Lucas 7, by Duff 2. Hit by pitcher—by Duff 1 (Markley). Left on bases—Empire 6, Infantry 8. Double plays—Bryan to Daugherty to Maguire. Umpire—Irwin. Time of game—2.05. Scorer—Garrett. Hits—off Duff 8 in 3 innings, off Lucas 6 in 5 innings. *Out for bunting third strike in 6th inning. †Out for bunting third strike in 3rd and 4th innings.

GAME AT ANCON, MARCH 3.

Ancon	0	1	3	3	7	0	0	0	x—14
Com-Sub	0	0	0	0	0	0	1	3	0— 4

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, March 2, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Feb. 25	125.0	91.4	44.0	15.7	15.7
Mon., Feb. 26	125.0	91.4	44.0	15.8	15.8
Tue., Feb. 27	125.0	91.4	44.0	15.9	15.9
Wed., Feb. 28	125.0	91.4	44.0	16.0	16 0
Thurs., Feb. 29	125 0	91.4	44.0	16.0	16.0
Fri., March 1	125.0	91.4	44.0	16.1	16.1
Sat., March 2	125.1	91.5	44.0	16.2	16.2
Height of low water to the nearest foot	125.0	91.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending March 13, 1912. (75th meridian time):

DATE.	Low	High	Low	High
	A.M.	A.M.	P.M.	P.M.
March 7	12.15	6.20	12.32	6 38
March 8	12.57	7.01	1.15	7.20
March 9	1.40	7.44	1.58	8.01
March 10	2.26	8.30	2.47	8.49
March 11	3.20	9.25	3.46	9.44
March 12	4.24	10.38	5.00	11.02
March 13	5.36	P.M. 12.08	6 18	......

The following vessels arrived at, or departed from the port of Balboa during the week ending March 2:

Arrivals—February 25, *Manavi*, from Buenaventura, February 25, *Pleiades*, from San Francisco; February 27, *Pachitea*, from Callao; February 27, *Limari*, from Valparaiso; March 2, *San Juan*, from San Francisco; March 2, *Chile*, from Guayaquil.

Departures—February 26, *City of Sydney*, to San Francisco; Februray 26, *Peru* (P. S. N.), to Guayaquil; February 26, *Quilpue*, to Valparaiso; February 28, *Ecuador*, to Guayaquil; February 29, *Acapulco*, to San Francisco.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning March 4, 1912.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	16
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24

MISCELLANEOUS.	
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Beef, per pound	25
Eggs, fresh, dozen	40
one-half dozen only	21
Bluefish, per lb	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	14
Fluke, fresh, per pound	10
Oysters, 1 quart kegs, per keg	50

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each	60, 70, 80, 90, 1.00
Ducks, Western, about 4½ pounds, each	1.25
Hens, milk fed, for roasting, about 3 pounds, each	50
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	25
Squabs, each	35
Capons, each	2.10
Grouse, each	50
Ducks, teal, per pair	60

CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18

DAIRY PRODUCTS.	*Price.*
Butter—Creamery special, per pound	*43
Sheffield Farms, extra fancy, per lb	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	20
Swiss, per pound	26
Edam, each	1 00
Cheese—Parmesan, pound	§35
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**20
Fer-mil-lac, bottle	**20
Ice cream, quart	‡25
½-gallon	‡50

VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	10
Cabbage, per pound	4
Cucumbers, per pound	15
Carrots, per pound	4
Lettuce, per pound	8
Onions, per pound	5
Potatoes, white, per pound	3
sweet, per pound	2
Parsnips, per pound	4
Turnips, per pound	3
Yams, per pound	3
Apples, per pound	5
Grapes, per pound	15
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery.

§Sold only from cold storage and not from commissaries.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the two weeks ending February 24 and March 2:

Sixaola, February 17, from New York, with 91 cases copper bars, for Atlantic Division; 40 cases putty, 14 crates handles, 9 cases hardware, for stock.

Normannia, February 20, from Jacksonville, with 41,846 pieces cross ties, for stock.

Heredia, February 22, from New Orleans, with 28 pieces pipe, for Pacific Division; 1,713 pieces lumber, 388 tons pig iron, 46 barrels brake shoes, for Mechanical Division; 78 pieces piling, 3,038 pieces lumber, 600 kegs lead, 12 pieces castings, 75 bags dairy feed, 129 barrels fire clay, for stock.

Colon, February 24, from New York, with 5 cases incandescent lamps, 52 pieces iron pipe, for Atlantic Division; 8 pieces steel beams, for Pacific Division; 84 pieces lumber, for Mechanical Division; 5 coils steel cable, 577 pieces switch and signal material, 296 bundles switch and signal material, 72 cases switch and signal material, 22 crates switch and signal material, 4 barrels switch and signal material, 120 bundles steel bars, 51 crates floor tile, for Panama Railroad Company; 30 coils rope, 14 cases rubber hose, 37 reels wire rope, 50 pieces steel plates and angles, 20 barrels pitch, 15 cases but locks, 84 bales waste, 14 cases valves, 400 cases turpentine, 14 bales rubber hose, 50 cases lanterns, 115 kegs rivets, 22 bundles paper, 12 cases paper, 10 kegs paint, 11 cases fusees, 437 bags oats, 34 bundles car parts, for stock; and a miscellaneous cargo, the whole consisting of 3,282 packages, weighing 500 tons.

Cristobal, February 22, from New York, with 78,360 bags cement, for Atlantic and Pacific Divisions.

Meridian, February 23, from New York, with 116,900 bags cement, for Atlantic and Pacific Division.

Almirante, February 22, from New York, with 10 cases hardware, for stock.

Carrillo, February 24, from New York, with 13 bundles rakes, 31 crates stovepipe, for stock; 66 pieces lumber, for Mechanical Division; 88 packages derrick parts, for Fortifications; 79 pieces pipe, for Atlantic Division.

Thelma, February 26, from St. Marys, Ga, with 1,613 pieces piling, for stock.

Pleiades, February 27, from San Francisco, with 1,712 bales hay, for stock.

Santa Marta, February 29, from New York, with 15 cases washers, 8 bales packing, 194 pieces steel plates, 98 bundles steel bars, 12 coils steel wire, 6 cases hardware, 12 pieces steel plates, for stock.

Knutsford, February 29, from New York, with 127,531 bags cement, for Atlantic and Pacific Divisions; 5 cases benzine, 280 cases detonators, for stock.

Mathilda, March 1, from New York, with 4,561 pieces steel rails, for Panama Railroad Company.

Parismina, March 1, from New Orleans, with 10 pieces cutter blades, for Atlantic Division; 78 bundles spillway castings, 72 pieces spillway castings, for Pacific Division; 277 pieces white oak lumber, 2,172 pieces yellow pine lumber, for Mechanical Division; 1,198 pieces yellow pine lumber, 67 pieces piling, 320 bundles switches and rods, 25 cases yellow ochre, 145 barrels fire clay, for stock.

Advance, March 1, from New York, with 15 kegs manganese dioxide, 40 cases brake shoes, for Mechanical Division; 7 cases horse collars, 7 cases rubber packing, 25 cases paste, 100 coils manila rope, 9 cases asbestos packing, 10 cases neatsfoot oil, 65 kegs horse shoes, 40 cases rubber hose, 10 cases paper, 13 cases insulated wire, 62 bags handles, 14 crates handles, for stock; and a miscellaneous cargo, the whole consisting of 496 packages, weighing 80 tons.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Panama	P. R. R.	Thursday	Feb.	29
Allianca	P. R. R.	Wednesday	Mar.	6
Colon	P. R. R.	Wednesday	Mar.	13
Advance	P. R. R.	Tuesday	Mar.	19
Panama	P. R. R.	Tuesday	Mar.	26
Allianca	P. R. R.	Monday	April	1
Colon	P. R. R.	Monday	April	8
Advance	P. R. R.	Saturday	April	13
Panama	P. R. R.	Saturday	April	20
Allianca	P. R. R.	Friday	April	26

CRISTOBAL TO NEW YORK.

Advance	P. R. R.	Wednesday	Mar.	6
Panama	P. R. R.	Wednesday	Mar.	13
Allianca	P. R. R.	Tuesday	Mar.	19
Colon	P. R. R.	Tuesday	Mar.	26
Advance	P. R. R.	Monday	April	1
Panama	P. R. R.	Sunday	April	7
Allianca	P. R. R.	Sunday	April	14
Colon	P. R. R.	Saturday	April	20
Advance	P. R. R.	Friday	April	26
Panama	P. R. R.	Friday	May	3
Allianca	P. R. R.	Thursday	May	9

NEW YORK TO COLON.

Metapan	U. F. C.	Wednesday	Feb.	28
Tivives	U. F. C.	Saturday	Mar.	2
Sibiria	H.-A.	Saturday	Mar.	2
Orotava	R. M.	Saturday	Mar.	2
Zacapa	U. F. C.	Wednesday	Mar.	6
Prinz Joachim	H.-A.	Saturday	Mar.	9
Sixaola	U. F. C.	Saturday	Mar.	9
Almirante	U. F. C.	Wednesday	Mar.	13
Prinz Sigismund	H.-A.	Saturday	Mar.	16
Carrillo	U. F. C.	Saturday	Mar.	16
Magdalena	R. M.	Saturday	Mar.	16
Santa Marta	U. F. C.	Wednesday	Mar.	20
Prinz August Wilhelm	H.-A.	Saturday	Mar.	23
Turrialba	U. F. C.	Saturday	Mar.	23
Metapan	U. F. C.	Wednesday	Mar.	27
Prinz Eitel Friedrich	H.-A.	Saturday	Mar.	30
Thames	R. M.	Saturday	Mar.	30
Tivives	U. F. C.	Saturday	Mar.	30
Zacapa	U. F. C.	Wednesday	April	3
Prinz Joachim	H.-A.	Saturday	April	6
Sixaola	U. F. C.	Saturday	April	6
Almirante	U. F. C.	Wednesday	April	10
Prinz Sigismund	H.-A.	Saturday	April	13
Trent	R. M.	Saturday	April	13
Carrillo	U. F. C.	Saturday	April	13

COLON TO NEW YORK.

Santa Marta	U. F. C.	Thursday	Mar.	7
Prinz August Wilhelm	H.-A.	Tuesday	Mar	12
Turrialba	U. F. C.	Tuesday	Mar.	12
Metapan	U. F. C.	Thursday	Mar.	14
Tivives	U. F. C.	Tuesday	Mar.	19
Thames	R. M.	Tuesday	Mar.	19
Prinz Joachim	H.-A.	Wednesday	Mar.	20
Zacapa	U. F. C.	Thursday	Mar.	21
Sixaola	U. F. C.	Tuesday	Mar.	26
Prinz Sigismund	H.-A.	Wednesday	Mar.	27
Almirante	U. F. C.	Thursday	Mar.	28
Thames	R. M.	Saturday	Mar.	30
Carrillo	U. F. C.	Tuesday	April	2
Blucher	H.-A.	Wednesday	April	3
Santa Marta	U. F. C.	Thursday	April	4
Prinz Eitel Friedrich	H.-A.	Wednesday	April	10

NEW ORLEANS TO COLON.

Abangarez	U. F. C.	Saturday	Mar.	2
Heredia	U. F. C.	Wednesday	Mar.	6
Atenas	U. F. C.	Saturday	Mar.	9
Orleanian	U. F. C.	Wednesday	Mar.	13
Parismina	U. F. C.	Saturday	Mar.	16
Cartago	U. F. C.	Wednesday	Mar.	20
Abangarez	U. F. C.	Saturday	Mar.	23
Heredia	U. F. C.	Wednesday	Mar.	27
Atenas	U. F. C.	Saturday	Mar.	30
Orleanian	U. F. C.	Wednesday	April	3

COLON TO NEW ORLEANS

Parismina	U. F. C.	Thursday	Mar.	7
Cartago	U. F. C.	Thursday	Mar.	7
Abangarez	U. F. C.	Thursday	Mar.	14
Heredia	U. F. C.	Thursday	Mar.	14
Atenas	U. F. C.	Thursday	Mar.	21
Orleanian	U. F. C.	Thursday	Mar.	21
Parismina	U. F. C.	Thursday	Mar.	28
Cartago	U. F. C.	Thursday	Mar.	28

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prin August Wilhelm* and *Prin Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, MARCH 13, 1912. No. 29.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Provisions for Drainage at Pedro Miguel.

The drainage of the portion of Culebra Cut on the Pacific side of the continental divide passes through a concrete-lined ditch in the east approach chamber at Pedro MiguelLock and into the center wall culvert and is discharged at the lower end into a ditch leading into the Rio Grande. In order to continue with the laying of floor in the east approach chamber, the sides of the ditch are being revetted with selected rock and the concrete floor will be laid over the rest of the chamber. The revetment rises about 10 feet from the present perpendicular sides of the concrete channel, the tops of which are 2½ feet above the bottom. For two feet it is vertical and the rest of the way it batters back, 1 on 2, the width at top being about 20 feet. The ditch passes through the sill for the floating caisson dam. When the work nears completion, this section of the sill will be filled with reinforced concrete but the revetted drain between the sill and the emergency dam sill will not be filled, except in time by sediment from the water in the approach. Such a problem of drainage is not encountered at Miraflores, where there is now an unobstructed flow and will later be a spillway, or at Gatun Locks, where there is a spillway.

Canal Work in February.

The grand total of Canal excavation to March 1 was 163,182,086 cubic yards, leaving to be excavated 32,141,293 cubic yards, or about one-sixth of the entire amount for the completed Canal.

The total for February was 2,643,410 cubic yards, as compared with 2,714,174 cubic yards, in February, 1911.

The dry excavation amounted to 1,589,353 cubic yards, and was principally by steamshovels. The dredges removed 993,142 cubic yards, and 60,915 yards were sluiced at Miraflores Locks, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 645,706 cubic yards. Of this total, 24,445 cubic yards were dry excavation.

The total excavation in the Central Division was 1,428,356 cubic yards, all of which was from the prism. The amount taken from Culebra Cut was 1,349,569 cubic yards.

In the Pacific Division, the total excavation was 569,348 cubic yards, 371,881 cubic yards of which were taken out by dredging at the Pacific entrance.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Locks, Dam and Spillway	1,228	....	1,228
Mindi	23,217	....	23,217
Total	24,445	....	24,445
Wet excavation—			
Atlantic entrance	581,399	....	581,399
Locks, Dam and Spillway	....	39,862	39,862
East Diversion	....	....	....
Total	581,399	39,862	621,261
Total wet and dry excavation	605,844	39,862	645,706

CENTRAL DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Culebra Cut	1,349,569	....	1,349,569
Chagres section	66,145	12,642	78,787
Obispo Diversion	....	....	....
Total	1,415,714	12,642	1,428,356

PACIFIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Locks, Dams and Spillways	65,906	....	65,906
Diversions	....	....	....
Prism, south of Pedro Miguel Locks	70,646	....	70,646
Total	136,552	....	136 552
Wet excavation—			
Pacific entrance	432,796	....	432,796
Miraflores Locks	....	....	....
Diversions	....	....	....
Total	432,796	....	432,796
Total wet and dry excavation	569,348	....	569,348

TOTAL CANAL EXCAVATION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation	1,576,711	12,642	1,589,353
Wet excavation	1,014,195	39,862	1,054,057
Total	2 590,906	52,504	2 643,410

Mean rainfall along Canal (eleven stations), 1.01 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc.: that is, It represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks.	26,664	76,532	103 196
Concrete laid in dams and spillways	10,268	....	10,268
Fill placed in dams	356 620	61,628	418 248

Excavation Record in Culebra District.

On March 6th, 25 steamshovels working in the Culebra Construction District of the Central Division excavated a total of 41,254 cubic yards, car measurement, in a working day of eight hours. This is the greatest amount of material ever excavated in one day in the Culebra District since the commencement of operations by the United States.

Changes at Cold Storage Plant.

A concrete shipping platform, 20 by 20 feet in plan and of a height for the convenient transfer of materials to and from wagons, has been constructed at the raw material store of the Commissary cold storage plant. This supplants the old wooden platform and is in addition provided with an inclined ramp for the passage of trucks.

Two new ice cream freezers, to be supplemented by a third under shipment, have been installed to take the place of the four freezers formerly in use but now worn out. The capacity of each of the new freezers is 50 gallons an hour, in five 10-gallon batches. About 600 gallons of cream, in two grades and seven flavors, are sold every day through the commissary stores and hotels. In the construction of the new freezers, the vessel containing the cream is surrounded by a larger tank and calcium brine, kept at a temperature of plus 12 degrees Fahrenheit by means of an ammonia brine-cooler, is made to circulate through the space between vessels. It is not necessary for the cream to be handled with spoons, as it is poured in at the top and, when frozen, is drained out through the bottom. It is not frozen stiff but is stored in a temperature of 4 degrees Fahrenheit to harden. Besides being faster, more sanitary and reliable, the new freezers have allowed a reduction of one-third of the force at work on freezing. Each freezer is 6 feet high and is operated by a 3-horsepower direct current motor.

Upper Approach Wall at Gatun.

To further the construction of the upper approach wall at Gatun Locks the railway tracks leading from the Panama railroad, at a junction east of the Gatun station, to the dam, have been removed where they crossed the site of the wall and reinforced concrete piles have been driven to afford foundation for the final section of the wall. Work on the approach wall was begun on September 30, 1911, at the outer end and at the termination of the center wall, with two forces working

NOTES OF PROGRESS.

(*Continued.*)

toward one another. The railway tracks crossed the site of the wall between the scenes of operation. Access by rail to the dam is now afforded by tracks running along the west side of the locks and connecting with the railroad near Mindi.

The last piles for the foundation were driven on March 9, and on the same day the forms were erected for the base slab for this section, about 80 feet in length. The slab is to be between 4 and 5 feet thick, so that its surface will be at 32 feet above sealevel. It is to be 60 feet wide, projecting on either side a foot beyond the face of the cellular wall which will be erected on it. About 16,000 of the required 35,000 cubic yards of concrete for the cellular portion of the wall have been placed, so that it is now 46 per cent completed. The auxiliary mixing plant, east of the upper end of the locks proper, has been shut down and concrete is now supplied only from the construction plant on the west side of the locks The trestle beside the approach wall, on the west side, from which the concrete is placed by means of derricks and locomotive cranes, extends the length of the portions of the wall which are still unfinished. Dredge *No. 82* continues filling around the base with material pumped from the bottom of the lake.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 83 per cent completed, 188,541 cubic yards, out of a total of 225,000, having been placed at the close of work on March 9. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
March 4..............	336	15.30	2
March 5..............	360	16.00	2
March 6..............	268	12.00	2
March 7..............	320	12.00	2
March 8..............	340	16.00	2
March 9..............	368	16.00	2
Total..............	1,992	87.30	2
Previously reported...	186,549		
Grand total..........	188,541		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending March 9, follows:

DATE.	Hours worked.	Cubic Yards.
March 4......................	4.00	1,818
March 5......................	4.10	1,848
March 6......................	4.20	1,804
March 7......................	3.45	1,836
March 8......................	4.25	1,830
March 9......................	4.30	1,375
Total......................	25.10	10,511

Ancon Crusher.

DATE.	Hours worked.	Cubic Yards.
March 4......................	13.25	4,333
March 5......................	16.15	4,734
March 6......................	13.30	3,923
March 7......................	13.25	3,784
March 8......................	13.50	5,001
March 9......................	10.20	3,437
Total......................	80.45	25,212

Warm Weather.

Unusually warm weather prevailed over the Isthmus on March 7, the temperature in the shade on this date reaching a maximum of 92°F. at Culebra, and 96.2°F. at Ancon.

The temperature at Ancon was a fractional part of one degree higher than the highest previously recorded at any station in the Canal Zone during the past six years, the previous maximum record being 96.0°F. at Ancon on March 20, 1908.

Colon-Gatun Shuttle Train.

A train service between Colon and Gatun was put into effect on Monday, March 11, on the following schedule:

Leave.	P. M.	Arrive.	P. M.
Colon..........	2.30	Gatun..........	2.50
Gatun..........	3.00	Colon..........	3.20
Colon..........	4.50	Gatun..........	5.10
Gatun..........	5.20	Colon..........	5.40

CONCRETE WORK IN THE LOCKS.

Over 80 per cent of the concrete for the locks is in place, the amount at the close of work on March 9 being 3,394,569 cubic yards, out of a total of approximately 4,199,400. A total of 30,554 cubic yards of concrete was laid in the locks during the week ending March 9.

GATUN LOCKS.

Over 91 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on March 9 being 1,837,896 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending March 9, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 4......................	1,368	23.02	6	260	3.40	1	....	1,725½
March 5......................	1,378	27.14	6	26	.40	1	....	1,440
March 6......................	1,370	25.14	7	152	2.40	1	....	1,589
March 7......................	1,058	16.41	4	....	....	......	....	1,117½
March 8......................	998	19.00	4	....	....	......	....	1,061
March 9......................	764	12.32	6	....	....	......	....	812
*Portable mixers..............	....	....	......	371	....	......	....	....
Total......................	6,936	123.43	5.5	809	8.00	1	....	7,745
Previously reported..............	....	....	......	....	....	......	....	1,830,151
Grand total..............	....	....	......	....	....	......	....	1,837,896

The 371 yards shown for the portable mixers are reinforced concrete, and were placed on the following days: March 4th, 97½; March 5th, 36; March 6th, 67; March 7th, 59½; March 8th, 63; March 9th, 48.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 98 per cent completed, 822,042 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on March 9. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 4......................	272	8.00	2	210	19.50	4	....	482
March 5......................	320	9.50	2	245	30.00	5	....	565
March 6......................	380	11.50	2	213	23.33	4	....	593
March 7......................	260	8.00	2	194	23.00	4	....	454
March 8......................	162	5.00	2	13	3.00	1	....	175
March 9......................	156	5.00	2	152	16.50	3	....	308
Total......................	1,550	47.00	2	1,027	115.33	3.5	....	2,577
Previously reported..............	....	....	......	....	....	......	4,423	819,465
Grand total..............	....	....	......	....	....	......	4,423	822,042

MIRAFLORES LOCKS.

Over 53 per cent of the concrete for the system of two twin locks at Miraflores was in place on March 9, the total amount on that date being 734,631 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 4...	2,280	55.00	8	826	9.33	2	467	38.75	6	....	3,367
March 5...	2,036	54.17	8	858	13.33	2	527	43.17	6	....	3,421
March 6...	1,824	46.17	8	820	12.00	2	549	44.75	6	....	3,193
March 7...	1,618	45.83	6	830	14.00	2	747	55.17	8	....	3,195
March 8...	2,226	59.67	8	642	10.17	2	568	46.08	8	....	3,436
March 9...	2,312	58.00	8	718	11.50	2	590	45.75	7	....	3,620
Total...	12,296	318.84	7.67	4,488	70.33	2	3,448	273.67	6.5	....	20,232
Previously reported..	....	....	......	....	....	......	....	....	......	3,693	714,399
Grand Total....	....	....	......	....	....	......	....	....	......	3,693	734,631

STEAMSHOVEL RECORDS.

Work of Central Division and Panama Railroad Shovels.

During the month of February the total amount of material excavated in the Central Division was 1,428,356 cubic yards, of which 188,745 cubic yards were classified as earth, and 1,239,611 cubic yards as rock.

Of this quantity 1,392,455 cubic yards were removed by steamshovels, 23,860 cubic yards by cranes, 1,229 cubic yards by hand Contractors removed 10,812 cubic yards by hand.

The high record for the month was made by shovel No. 227, working 24 days in the Culebra District, which excavated 57,915 cubic yards of rock.

The second best record for the month was made by shovel No. 212. working 24 days in the Culebra District, which excavated 53,344 cubic yards of rock.

The best record for a shovel of the seventy-ton class was made by shovel No. 124, working 24 days in the Culebra District, which excavated 39,125 cubic yards of earth.

Shovel No. 231, working in the Pedro Miguel District made a high record for one day by excavating 3,040 cubic yards of rock on February 17.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best records for the month and for one day are shown in the following table:

BEST RECORDS FOR THE MONTH.

Shovel No.	Cubic Yards. Earth.	Rock.	Total.	No. of days at work.
EMPIRE DISTRICT.				
211	....	42,796	42,796	24
228	....	36,800	36,800	24
218	....	35,973	35,973	24
CULEBRA DISTRICT.				
227	....	57,915	57,915	24
212	....	53,334	53,334	24
203	....	48,485	48,485	23
PEDRO MIGUEL.				
231	770	33,098	33,868	23
253	3,000	25,476	28,476	20½
CHAGRES.				
262	9,967	8,250	18,217	11
265	15,741	1,500	17,241	20½

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
262	Chagres	Feb. 28	Earth	2,290
201	Empire	Feb. 3	Rock	2,850
210	Empire	Feb. 6	Rock	2,627
211	Empire	Feb. 9	Rock	2,488
227	Culebra	Feb. 20	Rock	3,002
227	Culebra	Feb. 28	Rock	3,002
212	Culebra	Feb. 7	Rock	2,983
203	Culebra	Feb. 2	Rock	2,869
231	Pedro Miguel	Feb. 17	Rock	3,040

Relocated Line of Panama Railroad.

The total steamshovel excavation on the relocated line of the Panama railroad amounted to 153,210 cubic yards.

The best month's record was made by steamshovel No. 263, working near Paraiso, which excavated 43,260 cubic yards of earth and 2,000 cubic yards of rock, a total of 45,260 cubic yards.

In the 70-ton class, the best month's record was made by steamshovel No. 128, working near Empire, which excavated 19,920 cubic yards of earth and 2,000 cubic yards of rock, a total of 21,920 cubic yards.

The best day's record for shovels with a 5-yard dipper was made by steamshovel No. 257, which excavated 2,880 cubic yards of rock on February 10.

The best day's record for shovels with a 3-yard dipper was made by steamshovel No. 123, which excavated 1,750 cubic yards of earth on February 3.

Month's records are place measurement, and day's records are car measurement. All material was loaded in 10-yard Western Dump cars.

BEST RECORDS FOR THE MONTH.

Shovel No.	Location.	Days worked.	Cubic Yards by Cross Section. Earth.	Rock.	Total.
263	Paraiso	24	43,260	2,000	45,260
266	Paraiso	24	3,105	35,710	38,815
257	Gatun	12	4,260	20,680	24,940
128	Empire	19	19,920	2,000	21,920

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
257	Gatun	Feb. 10	Rock	2,880
263	Paraiso	Feb. 28	Earth	2,650
262	Monte Lirio	Feb. 3	Rock	2,610
266	Paraiso	Feb. 1	Earth	2,290
123	Empire	Feb. 3	Earth	1,750

Total steamshovel output during the month of February, 153,210 cubic yards.

Total number of steamshovel working days, 99.75

Average output per working day, 1,536 cubic yards.

Steamshovel No. 225, Cristobal Terminal Docks.

The following statement shows the performance of Steamshovel No. 225, for the month of February, 1912. This steamshovel is working in the borrow pit at Folks River, excavating rock for filling the mole at the Cristobal Terminal Docks:

QUANTITIES OF EXCAVATION (88% ROCK, 12% EARTH.)

	Cubic Yards.
By car measurement	57,790
By cross sections	51,970
Cubic yards per car	9.0

OPERATION REPORT.

Days worked	24
Hours under steam	192.00
Hours worked	135.55
Cubic yards per hour worked	381
Per cent of time under steam that shovel worked	70.8

	Cubic yards.
General daily average, place measurement	2,165

DIVISION OF EXPENSE—DELAYS.

	Hours and minutes.	P. C. of time under Steam
Mining	2.50	1.5
Repairs	15.15	7.9
Waiting for cars	6.35	3.4
Switching	7.15	3.8
Derailments	0.20	0.1
Moving shovel	15.10	7.9
Cutting out (five times)	8.40	4.6
Total	56.05	29.2

LOST—At Empire, a brooch containing a solitaire diamond, 8 whole pearls, and 52 seed pearls. Reward for return to W. G. Brown, House 57-B, Empire.

LABOR FORCE AND QUARTERS IN FEBRUARY.

On February 28 there were 37,641 employes actually at work on the Canal and the Panama railroad, and of that number 30,845 were Canal employes. The gold force on the Canal work, composed almost entirely of white Americans, was 4,500. The total force at the close of February, 1911, was 35,955, and the Canal force, 28,755. The force report for February 28, 1912, follows:

Department.	SILVER EMPLOYES.*													Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Const'ct'n and Eng'r'ng.	4,407	12	13	260	772	3,011	4,070	754	137	617	5,093	2,778	†262	22,186	3,340	25,526
Civil Administration	186	..	..	2	4	23	......	......	...	.....	......	16	....	231	409	640
Sanitation	684	..	..	3	3	5	......	......	1	1	4	298	5	1,004	362	1,366
Quartermaster's	876	..	1	112	193	171	89	11	31	.....	26	704	‡17	2,231	204	2,435
Subsistence	678	..	..	2	.....	1	......	......	...	.....	......	......	....	681	58	739
Disbursements	7	..	..	....	.....	......	......	......	...	.....	......	......	....	7	26	33
Examinat'n of Accounts.	5	..	..	....	.. .	......	......	......	...	.....	......	......	....	5	101	106
Total	6,843	12	14	379	972	3,211	4,159	765	169	618	5,123	3,796	284	26,345	4,500	30,845
Month previous	6,726	12	16	366	883	3,149	4,067	824	152	576	4,965	3,740	268	25,750	4,364	30,114

Panama railroad force, 5 055. Panama railroad relocation force, 568; Panama railroad commissary force, 1,173 Total, 6,796. I. C C. force, 30,845 Grand total, 37,641

*All wages specified are in gold. †Includes 5 at 5 cents. ‡Includes 8 at 5 cents.

The force report for the Department of Construction and Engineering on February 28, follows:

Division.	SILVER EMPLOYES.*													Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Chief Engineer	133	..	..	39	36	80	79	81	19	34	465	152	3	1,121	226	1,347
Mechanical	202	5	2	29	53	512	63	.....	...	.....	980	23	9	1,878	775	2,653
Atlantic	1,803	6	9	91	356	946	1,044	217	...	74	936	355	39	5,876	800	6,676
Central	1,161	1	..	33	127	485	2,005	170	100	509	1,000	1,999	153	7,743	830	8,573
Pacific	1,108	..	2	68	200	988	879	286	18	....	1,712	249	†58	5,568	709	6,277
Total	4,407	12	13	260	772	3,011	4,070	754	137	617	5,093	2,778	262	22,156	3,340	25,526
Month previous	4,314	12	15	244	679	2,938	3,983	818	120	573	4,919	2,678	258	21,551	3,228	24,779

*All wages specified are in gold. †Includes 5 at 5 cents.

QUARTERS.

On March 1, there were 24,962 occupants of Commission quarters. Of these 9,423 were white Americans of whom 5,455 were men, 2,059 were women, and 1,909 were children. There were 6,262 Europeans of the laborer class, of whom 5,605 were men, 266 women, and 391 children. There were 9,277 West Indian negroes, of whom 6,897 were men, 1 049 women, and 1,331 children. Included in the above were 300 Asiatics, and 90 Panamans.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M'THS.	CULEBRA SECTION.*								CHAGRES SECTION.**				
	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912
Jan.	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	1,416,035	169,447	389,399	175,802	255,355	28,357
Feb	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	1,349,569	200,145	450,182	286,309	219,550	66,145
March	132,840	239,178	815,270	1,290,885	1,434,597	1,509,728	1,728,748	....	324,233	619,491	484,846	297,339	....
April	126,749	213,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	....	329,483	510,020	428,777	102,103	....
May	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	....	235,902	386,170	248,974	29,783	....
June	76,905	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	....	322,145	275,900	164,389	32,288	....
July	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	....	345,757	233,897	166,106	22,284	....
August	49,210	244,823	786,866	1,171,927	1,173,370	1,377,714	1,442,402	....	368,683	231,543	234,404	21,892	....
Sept	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	1,340,173	....	346,948	235,818	234,290	21,272	....
Oct	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	1,306,971	....	424,911	221,409	271,409	12,216	....
Nov	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	....	336,390	93,619	260,882	12,248	....
Dec	70,630	307,689	1,025,485	1,210,046	1,152,022	1,211,400	1,351,082	....	383,948	105,044	197,481	10,809	....
Totals	914,254	2,702,991	9,177,130	3,912,453	14,557,034	15,398,599	16,596,891	2,765,604	3,787,992	3,752,492	3,153,669	1,037,169	94,502

MONTHS.	ATLANTIC DIVISION.†					PACIFIC DIVISION.¶									
	GATUN LOCKS, DAM AND SPILLWAY.††					PEDRO MIGUEL LOCKS.‡					MIRAFLORES LOCKS, DAMS AND SPILLWAY.‡‡				
	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911	1912.	1908.	1909.	1910.	1911.	1912.
January	292,155	102,690	125,011	65,889	1,330	....	83,726	27,320	15,69	24,969	7,203	61,202	31,479	48,744	95,609
February	282,797	95,031	123,738	50,511	1,228	....	58,242	9,486	6,809	18,480	39,046	53,689	15,300	12,936	47,426
March	374,598	90,051	132,007	51,431	....	....	95,624	6,784	674	....	73,194	51,417	18,184	72,739	....
April	373,456	70,009	103,243	12,548	....	....	101,365	9,129	255	....	98,943	60,060	12,148	79,751	....
May	266,747	52,786	82,958	17,677	....	....	57,523	10,405	5,905	....	73,023	47,588	20,250	57,975	....
June	244,951	36,556	88,088	4,840	....	13,228	70,971	8,420	7,454	....	68,691	55,653	21,994	38,023	....
July	213,359	39,058	95,503	6,897	....	22,648	77,503	4,410	6,273	....	104,369	50,999	11,990	97,884	....
August	188,262	40,346	99,737	22,558	....	22,217	58,025	12,789	220	....	94,248	35,446	17,548	102,249	....
Sept'mber	145,990	49,945	103,040	3,489	....	28,833	48,825	10,405	3,472	....	90,923	31,803	8,590	96,112	....
October	154,064	57,321	118,327	112	....	48,875	39,002	7,433	5,365	....	74,700	25,349	9,850	107,790	....
November	118,278	63,452	94,552	....	....	55,401	20,207	10,636	12,962	....	52,930	18,644	9,400	84,894	....
December	119,904	96,590	72,030	....	....	65,578	28,342	11,195	17,320	....	69,650	20,083	17,906	79,480	....
Totals	2,774,561	793,835	1,238,234	235,952	2,558	256,780	739,355	128,412	82,399	43,449	846,920	511,933	194,639	878,577	143,035

*Total to March 1, 1912, 76,268,428 cubic yards. Excavated in 1904, May to December, 243,472 cubic yards.

**Total to March 1, 1912, 12,018,593 cu. yds., of which 192,769 cu. yds. were removed in 1907, 188,239 cu. yds. were removed by sluicing.

†Dry excavation at Mindi Hills began in July, 1907. There were excavated 172,851 cubic yards, 1907; 590,955 cubic yards 1908; 713,015 cubic yards, 1909; 662,995 cubic yards, 1911; 56,382 cubic yards, 1912; total to March 1, 2,196,198 cubic yards.

¶There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 770,191 cubic yards at different points in prism to Mar. 1, 1912. There were also 172 cubic yards removed by steamshovels outside of prism during October, 1908.

††Total to March 1, 1912, 6,411,947 cubic yards; in this total are included 26,628 cubic yards excavated October to December, 1906, and 1,340,179 cubic yards in 1907.

‡Total to March 1, 1912, 1,250,395 cubic yards. ‡‡Total to March 1, 1912, 2,575,104 cubic yards.

WET EXCAVATION.

MONTHS.	ATLANTIC DIVISION.†						PACIFIC DIVISION.††							
	ATLANTIC ENTRANCE.§						PACIFIC ENTRANCE.§§							
	1907.	1908.	1909.	1910.	1911.	1912.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
January	111,100	490,701	521,050	510,055	520,181	520,228	....	95,940	94,710	460,250	469,529	518,936	379,810	412,118
February	110,002	427,722	444,910	493,448	455,318	581,399	....	95,940	93,480	663,519	671,477	285,791	386,866	432,796
March	84,145	546,886	461,208	412,325	391,736	....	....	116,820	92,319	783,281	865,696	462,588	639,761	....
April	69,889	496,366	470,635	190,574	492,579	....	....	110,700	104,855	676,539	731,767	534,322	439,622	....
May	133,847	564,386	315,370	447,578	514,178	....	....	112,340	122,157	530,466	720,753	484,509	548,047	....
June	124,118	572,749	182,575	458,021	452,098	....	50,676	62,697	133,575	656,621	844,685	475,486	576,100	....
July	109,922	625,497	348,451	423,092	425,195	....	41,533	98,400	108,338	696,170	733,181	515,782	520,692	....
August	194,297	638,217	422,846	508,829	367,456	....	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....
September	403,842	624,776	410,574	451,873	420,434	....	114,308	105,780	153,975	750,080	662,976	473,585	534,667	....
October	415,120	505,260	314,778	549,788	470,400	....	81,836	97,170	357,122	762,276	720,920	467,873	339,815	....
November	422,797	570,832	457,889	600,708	742,242	....	71,176	92,988	365,423	609,089	627,791	425,870	462,283	....
December	442,835	679,604	489,121	482,370	533,409	....	71,094	90,528	349,551	729,960	727,460	387,034	278,960	....
Totals	2,621,914	6,742,996	4,839,407	5,528,661	5,785,226	1,101,627	485,153	1,191,233	2,143,789	8,056,025	8,399,498	5,538,745	5,736,864	841,914

†Dredges removed 38,425 cubic yards at Gatun Dam site in 1907, and 488,533 cubic yards at Gatun Locks in 1908 and 1909.

††Excavated at Miraflores Locks 309,647 cubic yards in 1909; 156,125 cubic yards in 1910; 176,578 cubic yards in 1911; total 642,350 cu. yds.

§Total to Mar. 1, 1912, 28,047,296 cu. yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906.

§§Total to March 1, 1912, 32,396,221 cubic yards. Of this amount, 769,724 yards were removed by monitors.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.†			PEDRO MIGUEL LOCKS.††			MIRAFLORES LOCKS.‡		
	1910.	1911.	1912.	1910.	1911.	1912.	1910.	1911.	1912.
Jan	54,136	72,919	34,983	16,273	38,513	15,077	....	24,018	48,416
Feb	55,696	72,103	26,664	13,218	37,011	12,639	146	20,896	63,893
March	60,998	66,884	....	18,793	44,716	....	314	31,173	....
April	63,227	67,361	....	24,522	28,635	....	13	38,758	....
May	74,273	67,844	....	29,576	19,135	....	27	36,154	....
June	89,401	55,305	....	30,631	18,243	....	1,603	26,536	....
July	84,001	71,046	....	41,464	19,906	....	3,672	32,840	....
Aug	85,686	66,928	....	51,264	20,736	....	6,030	57,003	....
Sept	76,720	57, 98	....	50,702	15,379	....	18,133	56,083	....
Oct	86,949	53,636	....	61,422	25,637	....	22,159	60,873	....
Nov	75,152	43,907	....	64,248	19,622	....	23,871	41,726	....
Dec	80,212	43,590	....	42,834	14,360	....	21,533	48,772	....
Total	886,451	758,821	61,647	444,947	301,893	27,716	97,501	474,832	112,309

Spillway, Gatun Dam, March 17, 1909–March 1, 1912, 187,323 cu. yds.
Miraflores Dam to March 1, 1912, 321 cubic yards.
†116,072 cu. yds in 1909. ††33,856 cu. yds in 1909. ‡102 cu. yds in 1909.

FILL PLACED IN DAMS.

M'THS.	GATUN.*				PEDRO MIGUEL.†		MIRAFLORES.‡			
	1911.		1912.		1911.	1912.	1911.		1912.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan.	211,992	218,690	173,900	239,266	......	38,044	89,243	24,685	......	24,920
Feb.	301,733	211,008	211,399	145,221	......	35,153	87,335	32,404	......	26,475
Mar.	342,800	255,047	......	......	......	......	25,131	23,940	......	......
April	368,658	205,130	......	......	......	......	14,100	67,260	......	......
May	419,348	207,751	......	......	......	......	18,353	30,032	......	......
June	432,008	227,996	......	......	......	......	53,858	28,315	......	......
July	324,947	201,996	......	......	14,865	......	24,957	54,415	......	......
Aug.	259,389	232,476	......	......	24,812	......	25,000	72,203	......	......
Sept.	261,858	194,497	......	......	4,052	......	6,409	34,480	......	......
Oct.	214,320	218, 05	......	......	3,400	......	7,130	37,250	......	......
Nov.	266,603	207,157	......	......	3,190	......	14,370	31,800	......	......
Dec.	89,752	233,063	......	......	7,350	......	......	23,730	......	......
T'tal	3,493,388	2,613,066	385,299	384,487	57,669	73,197	366,336	460,514	......	51,395

*Wet fill to Jan. 1, 1911, 5,833,076 c. y.; Dry fill to Jan. 1, 1911, 6,128,105 c. y.
†Dry fill to Jan. 1, 1911, 260,852 c. y.
‡Wet fill to Jan. 1, 1911, 291,712 c. y. Dry fill to Jan. 1, 1911, 609,863 c. y.

CANAL EXCAVATION TO DATE.

By French Companies		78,146,960
French excavation useful to present Canal		29,908,000
By Americans—		
Dry excavation	101,381,022	
Dredges	61,801,064	
Total		163,182,086
May 4 to December 31, 1904	243,472	
January 1 to December 31, 1905	1,799,227	
January 1 to December 31, 1906	4,948,497	
January 1 to December 31, 1907	15,765,290	
January 1 to December 31, 1908	37,116,735	
January 1 to December 31, 1909	35,096,166	
January 1 to December 31, 1910	31,437,677	
January 1 to December 31, 1911	31,603,899	
January 1 to February 29, 1912	5,171,123	

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation	8,608,145	37,182,399	*07,998	10,045,423
Dredges	28,574,254		10,153,421	
Central—				
Culebra Cut	76,268,428	88,287,021	13,175,577	13,514,275
All other points	12,018,593		338,698	
Pacific—				
Dry excavation	4,674,095	37,712,666	2,257,985	8,581,595
Dredges	33,038,571		6,323,610	
Grand totals		163,182,086		32,141,293

*Estimate exceeded by this amount.

LOCK WORKING MODEL.

Section of One Chamber in Concrete With Gates and Other Mechanism.

A working model of a section of the locks embracing the intermediate gates of a summit level has been constructed at Gorgona shops by the model maker, Taylor T. Curran. It is on a scale of one-half inch to a foot (1 on 24), and shows not only the construction of the lock chambers but also the method of operating the gates and other machinery. It will be on exhibition at the International Navigation Congress in Philadelphia, May 23 to 28, and later will probably form part of the Canal exhibit at the exposition in San Francisco. The following description accompanies the model:

MITERING GATES.

These gates are of the straight horizontal by-framed type, consisting of horizontal girders spaced from 3 feet 8 inches to 5 feet apart, a vertical system of frames and intercostals, and a double sheathing. The lower half of the leaf forms an air chamber, sub-divided by three vertical partitions. The pressure of the leaves against each other and against the hollow quoins is transmitted by slightly curved metallic bearing plates of hard steel, which after accurate adjustment, are backed up by babbitt metal. The positons of the main girders, frames and intercostals, as well as the arrangement of rivets, doubling plates, etc., are indicated in the model gates, and two panels of the sheathing are omitted at the top of one of the leaves to permit the interior construction to be inspected.

MITER FORCING AND LOCKING MECHANISM.

When the gates are within 6 inches of the mitering position (¼-inch on the model) they may be drawn together, and securely locked by a miter forcing and locking device on the end of one gate leaf, consisting of powerful jaws which clasp a pin in the end of the other leaf, the power being transmitted by a toggle joint actuated by a motor driven screw.

MITER GATE OPERATING MECHANISM.

This device is so designed that the speed of the gate varies approximately on the ordinate of the sine curve. The machine gives a maximum force with a minimum gate movement at the ends and a minimum force and maximum speed at the middle of the path of the gate leaf in opening and closing. This desirable combination of speed and force, by this new device, can be obtained by the use of a constant speed motor.

As shown in the model, motion is given by a horizontal strut which takes hold of the leaf through the medium of a vertical pin attached to the top girder. A nest of helical springs is placed in the gate end of the strut, to absorb shock and prevent breakage. The shore end of the strut is pivoted to a crank pin attached near the outer circumferance of a large horizontal gear wheel, the pitch diameter of which is 19 feet 1 inch. This gear wheel is turned by a pinion actuated by the motor, through reducing gears.

CULVERT VALVES AND MACHINERY.

The main culverts at the locks are divided by a central pier into two branches, 8 feet by 18 inches in area. Each of these branches is closed by a lifting valve of the Stoney type, uncounterweighted. These valves are operated through stems which pass through a stuffing box in a watertight bulkhead and into the machinery well where connection is made to a crosshead which is actuated by two non-rising screws geared to an electric motor.

The lateral culverts leading from the main middle wall culverts are each controlled by a cylindrical valve operated by a vertical stem connected through a revolving screw and gears to an electric motor.

PROTECTIVE DEVICES.

The main protection against boats damaging the gates of the summit locks of the canal is a huge chain; which when protecting the gates is stretched across the lock just above the water line and is lowered to the bottom for boats to pass over. As shown in the model the chain passes over a train of sheaves, two of which are fastened to the outside of a set of telescoping hydraulic cylinders, thus reducing the cylinder movement to one-fourth the chain movement.

The system consists of one large fixed cylinder, one slightly smaller cylinder moving within this, and a fixed plunger upon which the smaller cylinder moves.

For ordinary operation the chain is raised or lowered by pumping water into the larger or smaller cylinder, respectively.

If a moving ship should strike the fender chain, the latter when stressed to 220,000 pounds will produce a hydraulic pressure of 750 pounds per square inch in the cylinder, which pressure automatically opens a resistance valve and permits water to flow out of the cylinder, thus maintaining a constant pressure in the cylinder and hence a constant stress on the chain while the latter is playing out and bringing the ship to rest.

THE MODEL.

The model is 6 feet 4 inches in length, and 8 feet 6 inches in width, and includes one lock chamber and enough of the center wall to show the relation of the twin chambers to one another. It is built up on six-inch "I" beams, three running laterally and two lengthwise. On this base is erected a frame of one-inch angle iron joined with inch band iron, over which is stretched heavy wire screen of ¾-inch mesh, the whole frame being from ½ to 1 inch under scale. Upon this framework is plastered a cement mortar varying from one-half inch to one inch thickness on the inside of the mesh, and from one to three inches on the outside, the whole being thus brought up to scale. The result is a model that looks exactly like the concrete walls of the locks, showing in addition, because it is in section, the method of stepping up the walls in the back from broad base to narrow top, the relation of the water supply culverts in the side and center walls, the machinery chambers and operating tunnels, towing tracks on top of the lock walls, decorative lamps along the coping, and even the ladder by means of which one may climb from the bottom to the top of the chamber, and the gage which indicates the depth of the water. In the forebay, part of the floor of the chamber is made so that it can be lifted out, showing the relation of the lateral culverts under the floor to the supply culverts in the side walls.

The section is taken in a chamber where the gates are 77 feet high, and those in the model are therefore 3 feet 2½ inches high. In the original they are built up of steel as indicated above. In the model a wooden frame takes the place of the steel girders, and upon this, to represent the steel sheathing of the gates, has been tacked sheet copper by means of escutcheon pins, one to represent every rivet, in all between 110,000 and 115,000 pins. On the lock walls are the gate operating machines, the large bull wheels, with strut or arm stretching out to open and close the gates. These wheels and the mechanism that run them are also to scale and in exact duplicate of the large machines, except that they are operated by a 1-15 horsepower motor. The motors are carefully rated so as to represent the motors in operating condition. They are synchronous in movement and, as indicating the probable results with the large motors and the large machines, it is noteworthy that they close and open the model gates in such unison that the gates come to miter, or to rest in their recesses, at practically the same time. The miter forcing machine is also on the model, run by a toy motor. In fact, the only detail in which the gate and mechanism are not duplicated in the model is that the handrail over the top of the gate, which is represented to scale, is not raised and lowered in the model as it will be in the locks to make way for the towing lines. In order to obviate the natural tendency of the frame of the gates to warp, the wood has been used so that the grain runs in six distinct directions.

On the coping of the model are shown the tracks, rack and conductor slots of the electric locomotives for towing ships through the locks as well as lamp posts, manholes, snubbing hooks and other small accessories to a large lock.

The chambers of the rising stem gate valve machines and of the cylindrical valve machines have been left open so that one may see the operation of the machinery. Each of the valves is run by a one-fifteenth horsepower motor, and the machines are equipped with the proper limit devices so that the operation is automatically controlled. The chain fender machine is built with the view of connecting it with a city water main.

Stenographer and Typewriter Examination.

Examination will be held at Culebra probably about the last Sunday in April for stenographer and typewriter, Isthmian Canal Service and Philippine Service, and typewriter, Isthmian Canal Service.

Attention is invited to the following preference in certification accorded to eligibles examined by this Board in the Canal Zone for appointment, that is, station, in the Canal Zone: "As a result of examinations for positions on the Isthmus of Panama two lists of eligibles will be established, one containing the names of persons examined on the Isthmus, the other containing the names of those examined at other places. Those examined on the Isthmus will be preferred for appointments in the Isthmian Canal Service."

Form No. 1,424 contains information in regard to the above-named examinations and should be requested by applicants; application form 304 is needed for the Isthmian Canal Service and form 2 for the Philippine Service.

Applications for the above-named examinations will not be received in this office after the close of business on April 13; this date may be changed by this office if it is deemed necessary to do so.

In filing applications the date of examination should be omitted. In answering questions as to bona fide residence, such residence must be shown in a State or Territory of the United States, and county thereof, *up to the time of filing application.*

JOHN K. BAXTER,
Secretary, Isthmian Civil Service Board.
Culebra, C. Z., March 8, 1912.

Central Division Unloaders.

During the month of February the following numbers of trains and cars were unloaded by the Central Division:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa	4	1,113	22,260
Miraflores	3	670	13,400
Gamboa	4	1,124	23,604
Total	11	2,907	59,264

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of February, 1912, follows:

DESTINATION.	Number Cars.	Cubic Yards.
Pacific Division	2,108	36,510
Central Division	22	330
Atlantic Division	470	9,438
Mechanical Division	21	525
Quartermaster's Department	5	125
Panama railroad	37	855
Miscellaneous	30	606
Total	2,693	48,389

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The Little Workers, the girls' club of Gorgona, held a cake sale on March 2 for the benefit of the fund of three hundred dollars pledged by the Canal Zone Federation for the education of a native blind boy, the receipts being $5. The club will hold a similar sale on April 6. The receipts of the cake sale held by the Empire Woman's Club in February were $15 and the same sum was raised by the Gatun Woman's Club at a tea and entertainment held on February 29.

The program of the Cristobal Woman's Club on Wednesday, March 6, consisted of an address on the art of nursing, by Miss MacCormack, superintendent of nurses at Colon Hospital. On March 13, the home department will have as its subject "The History of Furniture and Rugs;" on March 20, the art and literature department will present a program on "Folk Songs." The meeting of the executive board will be held on March 27 at 9 a. m.

The meeting of the Empire Woman's Club was held at the home of Mrs. M. E. Smith on Thursday, March 7. There was a discussion on current events, and music was rendered by members of the club. The club is planning a second sale for the federation fund.

Ancon Study Club.

The Ancon Study Club completed its first month's work with the meeting on March 6, which was held at the home of Mrs. J. C. Morley. The club was organized on January 24, at which time it was decided to take up the study of Panama for the first month. The schedule of meetings with the programs and speakers has been as follows: January 31, sketch of the history of Panama from the voyages of Columbus to the fall of Old Panama and the removal of the city to its present site, Miss Beattie; February 8, the French occupation and the two French Canal companies, Mrs. H. C. Shick; a supplementary paper on Fort San Lorenzo by Mrs. Harry Hunter; February 15, the American occupation, Mrs. Mark White, and the sanitation of Panama by Mrs. J. C. Crawford; February 23, visit to Culebra; February 29, no meeting; March 6, sketch of the history of the Panama railroad, Mrs. Hunter. The next study will be Italy, Rome, and Greece, as outlined in the Bay View Course. It is proposed to spend about three months on this course. The first class will be at the home of Mrs. A. O. Mason, House 95, Ancon. On March 13, the meeting will be held in Ancon Hall, when the loan exhibit of pictures belonging to the Canal Zone Federation of Women's Clubs will be on view.

Church Notes

The annual missionary meeting of the National Baptist mission in Panama and the Canal Zone will be held in the mission church in the Guachipali district, Panama, on March 17 and 18. The preachers at the various services will be as follows: On March 17, at 11 a. m., the Rev. Victor Kennedy, representative in Panama and the Canal Zone of the British and Foreign Bible Society; at 3 p. m., the Rev. Carl H. Elliott, pastor of the Union Church at Cristobal; at 7 p. m., the Rev. E. C. Cooke, pastor of the Wesleyan Methodist Church at Colon. On Monday evening, March 18, at 7.30 o'clock, there will be a public meeting when the speakers will be the Rev. Harry Compton, pastor of the Methodist Episcopal church at Panama, and the Rev. A. A. Nellis, pastor of the Union churches at Culebra and Empire.

The annual meeting of the Altar Society of St. Ferdinand's Church, Empire, was held in the parish house on Tuesday, February 13, when the following officers were chosen for the ensuing year; President, Mrs. Ergenzinger; Vice President, Mrs. Golden; Secretary and Treasurer, Mrs. Westberg. The Very Rev. Father Gorman, the visiting missioner, was the guest of the society. The guild now has 25 members. Meetings are held in the parish house on the second Tuesday in each month. During Lent services are held in St. Ferdinand's Church on Wednesday and Friday evenings at 7.30 p. m.

Steamshovel and Dredgemen.

Local No. 19, I. B. of S. S. and D. M., will hold its monthly meeting on March 17 at Empire lodge hall at 12.15 p. m. As business of importance is to be transacted all members are requested to attend.

Moose.

Panama Lodge No. 883, Order of Moose, was organized at Ancon Hall on Sunday afternoon, March 10, with 97 charter members. The order has leased rooms in the Hotel Normandie, Panama. It is proposed to organize a junior branch, composed of young men twenty years old and under. Following are the officers elected for the year: Dictator, E. L. Emery, of Gorgona; past dictator, F. G. Calvert, of Las Cascadas; vice dictator, Geno Gaul, of Gorgona; prelate, S. W. Newhard, of Gorgona; secretary, Joe M. Shurts, of Panama; treasurer, Albert Gutbertlet, of Panama; sergeant at arms, Winfield Landry, of Gorgona; inside guard, Lloyd McRae, of Culebra; outside guard, J. B. Christansen, of Gorgona. The trustees are E. W. Stolberg, L. E. Herman, and Roland McNish. Dr. H. V. Joahson and Dr. T. O. Luckett were appointed physicians.

School Holidays.

The Canal Zone public schools will be closed for the Easter Holidays from March 30 to April 7, inclusive. The schools will reconvene at the usual hour on Monday, April 8.

Yellow Fever in Quarantine.

Louis Paulete, mulatto, a sailor on the steamship *Chile*, died in quarantine in Panama harbor of yellow fever on March 4. On the way from Valparaiso he became ill and at Guayaquil he was treated for two days in the city hospital for malaria, being discharged with normal temperature. Reembarking on February 25, he reported ill again the second day out. The ship's surgeon suspected yellow fever and his diagnosis was confirmed at the Panama quarantine station, where Paulete arrived on March 2. The victim was 22 years of age and a native of California.

An American foreman and five West Indian laborers were injured at Miraflores on March 6 by the bursting of a water tank which had recently been erected and on which they were at work, preparing it for painting.

Missing Man.

Information as to the whereabouts of Robert Myers Jefferies, a machinist formerly of Philadelphia, should be sent to the Director of Posts, Ancon, who is holding a letter for him.

VACATION PAY IN ADVANCE.

Comptroller of Treasury Holds Commission May Make Such Payments.

The Comptroller of the Treasury was requested to give an opinion as to the legality of making payments under the terms of the following resolution, which it was proposed to submit to the Commission for action:

Resolved, That any employe of the Commission whose service terminates on or after October 1, 1912, whether by resignation or by discharge, at a time when he was on leave with pay due him under the regulations of the Commission, instead of being granted such leave of absence with pay shall, at the time of termination of his actual service, and in addition to his regular pay for such service, be paid an amount equal to the amount he would have been entitled to receive had he been granted leave under the regulations of the Commission; and that there shall be paid to the estate of an employe whose service is terminated by death at a time when leave is due him an amount equal to the amount he would have received had his service terminated by resignation or discharge.

The purpose of the proposed rule is to save the Commission the extra work required in computing pay and forwarding it to ex-employes after their leave period has expired, and they have resigned or been discharged, and to assist such employes, as otherwise would not have enough money to leave the Canal Zone and get a start elsewhere, by paying their leave pay in advance. The Comptroller holds as follows,:

By the present regulations of the Commission employes may be granted a certain number of days leave of absence with pay after they have been in the service of the Commission a specified period of time, and that leave may accumulate for a period not exceeding two years service; also where the service terminates while on a leave of absence by the acceptance of a resignation or by discharge on account of reduction of force, such employe may be paid for the full period of leave without returning to the Isthmus.

As I understand the proposed resolution it is your purpose, if not contrary to law, not to change in any way the amount of leave earned, but where an employe on or after the first of October next resigns or is discharged to pay him on the acceptance of his resignation the amount that would be due him as leave pay after the expiration of his leave period, or in case of his death to pay such amount to his estate.

The proposed regulation does not attempt to operate retroactively, but wholly *in futuro*. It is substantially a regulation to grant pay for leave instead of leave with pay as is now the case. Under the law you are authorized to fix and pay salaries out of your lump appropriation except as restricted by the provisions of the act of March 4, 1911 (36 Stat., 1,450), which reads:

> "Except in cases of emergency, or conditions arising subsequent to and unforeseen at the time of the passage of this Act, there shall not be employed at any time during the fiscal year nineteen hundred and twelve, under any of the foregoing appropriations for the Isthmian Canal, any greater number of persons than are specified in the notes submitted respectively in connection with the estimates for each of said appropriations in the annual book of estimates for said year, nor shall there be paid to any of such persons during that fiscal year any greater rate of compensation than was authorized to be paid to persons occupying the same or like positions on the first day of July, nineteen hundred and ten, and all employments made or compensation increased because of emergencies or conditions so arising shall be specifically set forth, with the reasons therefor, by the chairman of the commission in his report for the fiscal year nineteen hundred and twelve."

I do not understand that your proposed action in any way violates such provision by increasing the rate of pay or number of the employes as therein interdicted, nor do I understand that it is in violation of Section 3,648, Revised Statutes, prohibiting an advance of public moneys. It is no more an advance of public moneys to pay these amounts as pay for leave, than have been your payments to persons heretofore in the service of the Commission on leave with pay, who were discharged or resigned while on leave of absence. I see no distinction in principle between paying for the leave earned after October first next to a person who resigns, than to his estate where he dies. In neither case is any service contemplated during the period for which pay for leave is given.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

ISTHMIAN INDOOR BASEBALL LEAGUE.

The following is the standing of the teams of the Isthmian Indoor Baseball League on March 9, 1912:

	Played.	Won.	Lost.	P. C.
Gorgona	2	2	0	1.000
Empire	2	1	1	.500
Cristobal	2	1	1	.500
Corozal	2	1	1	.500
Culebra	2	1	1	.500
Gatun	2	0	2	.000

Games played March 9: Empire 22, Cristobal 14; Gorgona 26, Gatun 7; Culebra 14, Corozal 5.

Games to be played March 16: Culebra at Cristobal, Empire at Gatun.

CULEBRA.

The Spanish class which was organized on Saturday evening, March 4, will meet at 7 o'clock each Saturday instead of at 8.00.

A discussion club has been organized and will meet on Friday evening of each week at 8 o'clock.

The glee club meets on Tuesday evening every week, unless otherwise notified. The club is planning to give a musicale of classical music.

On Saturday evening a baseball game between Corozal and Culebra resulted in a score of 14 to 5 in favor of Culebra. The teams were: Culebra—Cushing, Hepler, Adams, Van Zandt, Dougherty, Baumer, and Tupper. Corozal—Bath, Russell, Saunder, Wiser, Lofgren, Sims, Roberts, and Ralley. Tupper of Culebra struck out 14 men, Wiser of Corozal struck out 9 men.

EMPIRE.

The Cristobal pool and billiard team played the Empire team Saturday evening with the following results: *Pool*—Empire—Hirsh 100, Pearson 98, McKeever 100, Huson 86, total 384. Cristobal—Ford 64, Schlager 100, Pack 89, Jackson 100, total 353. *Billiards*—Empire—Wood and Barnes 146; Cristobal—Rice and Gamble 150.

A preliminary meeting was held at Empire Saturday night to consider the forming of an inter-association pool and billiard tournament, and a committee was appointed to make arrangements and rules.

There was an attendance of over 400 at the initial performance of the Empire minstrel troupe at Empire on Tuesday night, March 5. The show will be given at the other clubhouses in the near future, and there is demand for a return engagement at Empire.

GORGONA.

On Saturday morning, March 9, the Gorgona Juniors played the Cristobal Juniors a game of baseball; score, Cristobal 7, Gorgona 3. That afternoon, the local juniors played a team from Paraiso; score, Paraiso 8, Gorgona 3.

Gorgona won the second game in the indoor baseball series from Gatun on Saturday night, March 9, score, Gatun 7, Gorgona 26. Ridge, Louden, Hilty, Emerson, Christensen, Kuentz, Carpenter, Hennen, and Simms played on the Gorgona team and Wiston, Dickson, Wright, Dalton, Atkinson, Kersaise, and Thompson on the Gatun team. The umpires were Cunningham and Stevens.

The following scores were made in a game of duckpins with Gatun on Saturday night, March 9:

Gatun.				Gorgona.			
Green	97	93	88	Humphrey	100	88	86
Vier	100	97	79	Simms	72	88	104
Severn	73	75	71	Otis	72	82	
Huttlemire	77	92	109	Robertson	84	90	88
Abernathy	81	79	76	Haggerty	78	103	95
				Davis			87
Totals	428	416	423	Totals	406	451	460

In a match game of pool with Gatun, the points made were, Gatun 342, Gorgona 205. Louis De Poorter, champion pool player of the Isthmus, gave an exhibition of fancy pool shots.

A musical entertainment will be given at the clubhouse by the school of Gorgona, Friday, March 22, consisting of songs, games, and recitations. Charles E. Jennings is the director. All are invited to attend and admission will be free.

GATUN.

The Gatun Choral Club gave its first concert at Las Cascadas on Sunday evening, March 10, for the benefit of the members of the Tenth Infantry and the citizens of Las Cascadas. The first part of the program consisted of a tenor solo by Mr. Ross, a bass solo by Mr. Case, a violin solo by Mrs. Decker, a contralto solo by Madame Faure, and a soprano solo by Mrs. Hughes. The second part of the program consisted of the oratorio, "The Holy City", by the chorusof 25 voices. An orchestra from the Tenth Infantry assisted. A. B. Dickson acted as director. There was an attendance of over 300.

An orchestra from the *Prinz August Wilhelm* gave a concert at the clubhouse onMonday evening, March 11.

The Drop-in Discussion Club discussed the subject, "The Men and Religion Forward Movement," on Sunday evening, March 10.

The Empire Minstrels will play at Gatun on March 19.

Empire will play baseball at Gatun on Saturday evening, March 16. The public is invited.

CRISTOBAL.

Four hundred and seven people attended the moving picture show and concert by the German band from the *Prinz August Wilhelm*, on Tuesday evening, March 5.

On Thursday evening, March 7, a banquet was tendered to the members of the basketball team which has won 24 consecutive games playedon the Isthmus during the past two years. Of this number sixteen were tournament games, thus bringing to this clubhouse trophies for two seasons. The banquet was given in honor of the teams unbroken successes, and was served at the I. C. C. hotel. Covers were laid for 11, and speeches were made by all present.

On Friday, March 22 there will be a members' "smoker" at which there will be entertainment, with plenty of "smoke" and refreshments for all.

On Saturday night, March 9, the Cristobal duckpin bowlers defeated the team from Culebra with scores as follows:

Culebra.				Cristobal.			
Silver	82	94	96	Herrington	80	92	86
Cornthwaite	80	89	89	Weston	112	118	108
Hill	95	85	104	Gibson	96	95	80
Mengel	89	84	78	Smith	94	92	101
Case	81	99	107	Herring	102	102	115
Total	427	451	474	Total	484	499	490

The following high scores were made during the week ending March 9, 1912: *Duckpins*—DeLong, 101; Louch 101, 104; Bullard, 110, 100; Herring, 101, 106, 105, 102, 102, 115; Herrington, 108, 101, 120, 104, 102; E. Cotton, 100; Schofield, 105; Weston, 104, 106, 112, 118, 108; Gibson, 104; C. Cotton, 107; Whittles, 118; Smith, 106, 101; W. Burn, 101.

Misdirected Letters.

ANCON, C. Z., March 13, 1912.

The following insufficiently addressed letters originating in the United States and its possessions have been received at the office of the Director of Posts and may be secured upon request of the addressees:

Black, Meade P.
Bihlen, Ernest
Born, William
Buck, Mrs. Charlie C.
Burgum, Geo.
Callahan, D. J.
Campbell, Thomas J.
Carkers, S. C.
Carter, Clair Frederick
Cheney, J. W.
Conn, Mrs. J. E.
Connley, Mrs. Gertrude
Cummings, Geo. H.
Cummings, Mrs. M. J.
Deane, James
Dickenson, Wm. E.
Donnelly, Mrs. Eugene
Duncan, F. R.
Fowler, Frank W.
Frank, Henry L.
Gibbs, W. L.
Greenwood, Miss Lova
Grupe, Miss Helen (4)
Harry, S. B.
Hart, Miss S.
Harwood, Bob
Hoffman, F. W.
Holmeline, Miss M.
Hudson, Mrs. J. S.
Humphrey, Miss Jane Agnes
Hutzley, Mrs. Clara
Johnston, Mrs. M. L. (2)
Joyner, Charles K.
Klunk, Chas. E.
Lawrence, James
McGivern, James
McLeod, Mrs. Maud
Meredith, Tom
Miller, Virgil C.
Montgomery, Ray
Morewood, Thomas M.
Mull, Leonard
Owens, Brady
Parsons, Mrs. Frank
Payton, B. F.
Perry, Mrs. Mary
Powers, Mrs. Ira F.
Pullig, S.
Reese, William J. (2)
Richardson, Bob
Robin, Miss Marie
Roth, W. E.
Schnabel, Jacques
Shannon, W. M.
Smitb, Frank G.
Stevenson, N. V.
Welsh, S. D.
Werner, Otto
Whitty, Jas. J.
Williams, H. S. (pkg.)
Willson, Mrs. Sarah
Zacharias, Mrs. A. L.

Family Quarters.

Applications for married quarters on file for March 1, were as follows:

DISTRICT.	List No 1.	List No. 2.
Ancon	11 (3)	60 (14)
Ancon Hospital	....	7 (2)
Balboa	1	33 (7)
Bas Obispo	2	33
Corozal	....	59 (12)
Cristobal	2	136 (1)
Culebra	6 (1)	46
Empire	4	90 (31)
Gatun	....	116 (34)
Gorgona	8 (2)	82 (31)
Las Cascadas	2	30
Pedro Miguel	1	47 (18)
Porto Bello	....	12 (10)
Toro Point	....	3
Totals	37 (6)	754 (160)

NOTE—The figures in parenthesis show the number of applicants already occupying regular or non-housekeeping family quarters at stations other than those at which applications are filed.

BASEBALL.

PANAMA CANAL LEAGUE.

RESULT OF GAMES, MARCH 10.

At Colon—Com.-Sub., 10; 10th Infantry, 1.
At Ancon—Empire, 9; Ancon, 5.

STANDING OF CLUBS.

	P.	W.	L.	P.C.		P.	W.	L.	P.C.
Ancon	10	7	3	.700	Empire	9	5	4	.555
Com.-Sub.	9	6	3	.666	10th In'ty.	10	1	9	.100

SCHEDULE FOR MARCH 17.

At Colon—Com.-Sub. vs. Ancon.
At Empire—Empire vs. 10th Infantry.

GAME AT COLON, MARCH 10.

C.-S.	AB.	H.	PO.	A.	E.	Infantry.	AB.	H.	PO.	A.	E.
Buch'an,cf.	3	1	3	1	0	Deleh'ty,rf.	4	1	0	0	0
Perdue,lf.	5	3	0	0	0	Webber,lf.	4	0	2	0	1
Curtis,ss.	3	1	2	5	0	Smith,cf.	4	0	1	0	1
Weiss,1b.	3	0	9	0	1	Trickey,c.	4	1	6	2	2
Herring,2b.	4	0	4	1	0	Laugner,1b	4	1	9	0	2
Coffin,rf.	3	0	0	0	0	Skeris,ss.	4	1	4	2	1
McCusty,rf	1	0	0	0	0	Lucas,p.	1	0	0	2	0
Beard,3b.	5	1	1	1	0	Duff,p.	2	0	0	3	0
Sterner,c.	5	2	8	0	1	Saluski,2b.	3	1	3	2	3
Davis,p.	4	0	0	1	0	Cassiday,3b	2	1	2	2	0
Totals	36	8	27	9	2	Totals	32	6	27	13	10

Com.-Subs	0	0	2	2	2	2	0	2	0	—10
Infantry	0	0	0	0	0	0	0	0	1	— 1

Runs—C.-S.: Buchanan 4, Perdue, Curtis 2, Coffin, Beard, Sterner; Infantry: Laugner. Earned runs—C.-S. 1. Two-base hits—Tricky, Laugner, Curtis, Sterner. Three base hit—Skeris. Sacrifice hits—Cassiday, Curtis 2, Davis. Stolen bases—Cassiday, Buchanan 2, Curtis, Weiss, Beard. First base on errors—C.-S. 6. Base on balls—off Lucas 5, off Duff 2. Struck out—by Lucas 3, by Duff 0, by Davis 7. Hit by pitcher—by Lucas 1 (Herring). Left on bases—C.-S. 9, Infantry 4. Umpire—Van Ottman. Time of game—2.15. Scorer—Bullard. Passed balls—Trickey 2. Hits—off Lucas 4 in 4 innings, off Duff 4 in 5 innings.

GAME AT ANCON, MARCH 10.

Empire.	AB.	H.	PO.	A.	E.	Ancon.	AB.	H.	PO.	A.	E.
VanZ'dt,lf.	3	1	0	0	0	Lindberg,rf	4	2	1	1	1
Cle'nts,2b.	4	3	3	2	1	Drennan,cf	3	0	0	0	0
Maguire,1b	5	1	13	1	0	Guptil,1b.	3	1	9	2	0
Murphy,cf.	5	1	1	1	0	Smith,2b.	4	2	3	3	1
Herring,c.	4	1	5	1	1	Potter,ss.	4	1	3	3	3
Markley,rf.	5	0	1	1	0	Pear'an,3b.	4	2	1	1	1
Bryan,ss.	5	1	1	4	0	Edwards,lf.	4	1	4	1	1
Toone,3b.	4	1	3	4	1	Hodnot,c.	4	1	6	2	0
Marshall,p.	4	0	0	3	0	Russell,p.	4	0	0	3	0
Totals	39	9	27	17	3	Totals	34	10	27	16	7

Empire	3	1	0	0	0	0	3	0	2	—9
Ancon	0	0	0	1	0	1	0	0	3	—5

Runs—Empire: Van Zandt (3), Clements (3), Maguire, Murphy, Bryan; Ancon: Lindberg, Drennan, Guptil, Potter, Edwards. Earned runs—Empire 4, Ancon 1. Two base hits—Maguire, Van Zandt, Potter, Hodnet. Home run—Clements. Stolen bases—Van Zandt, Clements (2), Lindberg, Edwards. First base on errors—Empire 5, Ancon 1. Base on balls—off Marshall 1, off Russell 3. Struck out—by Marshall 4, by Russell 1 (Van Zandt). Left on bases—Empire 7, Ancon 4. Double plays—Toone to Clements to Maguire, Murphy to Maguire. Umpire—Foster. Time of game 2 hours. Scorer—Hoffman. Passed balls—Herring 2.

Supplies for the Canal.

The following steamers with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon and Balboa, during the week ending March 9:

Turrialba, March 2, from New York, with 518 bales hay, for stock; 130 cases copper bars, for Superintendent of Erection.

Panama, March 6, from New York, with 600 pieces steel knuckles, 400 pieces coupler knuckles, for Mechanical Division; 93 packages water gates, for Superintendent of Erection; 91 barrels screw track spikes, 129 crates building material, for Panama Railroad Company; 659 pieces steel bars, 410 bundles steel bars, for Pacific Division; 25 cases rubber hose, 60 cases valves, 200 coils steel wire, 48 cases picks, 100 cases fresh water soap, 134 cases candles, 417 bundles shovels, 184 kegs nuts, 50 cases paint, for stock; and a miscellaneous cargo, the whole consisting of 4,233 packages weighing 523 tons.

Karen, March 6, from New Orleans, with 163 pieces piling, 513,000 feet B. M. yellow pine lumber, for stock.

Metapan, March 7, from New York, with 21 cases fuse, for stock.

Cuzco, March 9, from Puget Sound, with 1,150,333 feet B. M. Douglas fir lumber, 5,000 sacks oats, for stock; 8 pieces spuds, for Fortification; 8 pieces spuds, for Atlantic Division; 10 pieces spuds, 12 pieces masts, for Pacific Division.

Chelston, March 9, from Baltimore, with 731 bundles reinforcing bars, 155 pieces C. I. pipe, 88 pieces girders, 176 pieces structural material, 132 bundles structural material, 47 cases structural material, 11 crates structural material, for Atlantic Division; 760 pieces structural material, for Panama Railroad Company; 775 pieces car wheels, for Mechanical Division; 2 locomotive cranes, for Superintendent of Erection; 694 tons vitrified tile, for locks, 200 bags tie plugs, 1,250 bundles splice bars, 4,000 kegs railroad spikes, 200 bundles brooms, 76,250 pounds dynamite, 233 tons blacksmith coal, 1,300 pieces sewer pipe, for stock.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning March 11, 1912.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	16
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24
Venison (Imported), Stew, per pound	.12
Forequarter (not under 6½ pounds), per pound	.16
Rack (not under 5½ pounds), per pound	.27
Saddle (not under 7½ lbs.), per pound	.27
Leg (not under 9 pounds), per pound	.27
Chops, per pound	.28
Cutlets	.28

MISCELLANEOUS.	
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Beef, per pound	25
Eggs, fresh, dozen	*37
one-half dozen only	*19
Bluefish, per lb	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	14
Fluke, fresh, per pound	10
Oysters, 1 quart kegs, per keg	50

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each	60, 70, 80, 90, 1.00
Ducks, Western, about 4½ pounds, each	1.25
Hens, milk fed, for roasting, about 3 pounds, each	50
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	*23
Squabs, each	35
Capons, each	2.10
Grouse, each	50
Ducks, teal, per pair	*50
Ducks, Blackhead, pair	60
Partridges	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30

CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30

	Price.
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18

DAIRY PRODUCTS.	
Butter—Creamery special, per pound	*35
Sheffield Farms, extra fancy, per lb.	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	†22
Swiss, per pound	†28
Edam, each	1.00
Cheese—Parmesan, pound	§35
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**20
Fer-mil-lac, bottle	**20
Ice cream, quart	‡25
½-gallon	‡50

VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	10
Cabbage, per pound	4
Cucumbers, per pound	*12
Carrots, per pound	4
Lettuce, per pound	8
Onions, per pound	5
Parsley, per pound	10
Potatoes, white, per pound	3
sweet, per pound	2
Parsnips, per pound	4
Turnips, per pound	3
Tomatoes, per pound	10
Yams, per pound	3
Apples, per pound	†6
Grapes, per pound	15
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery.

§Sold only from cold storage and not from commissaries.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, March 9, 1912. All heights are in feet above mean sealevel.

Day and Date.	Station.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Mar. 3	125.1	91.5	44.0	16.3	16.3
Mon., Mar. 4	125.0	91.5	44.0	16.4	16.4
Tue., Mar. 5	125.0	91.4	44.0	16.4	16.4
Wed., Mar. 6	125.0	91.4	44.0	16.6	16.6
Thurs., Mar. 7	125.0	91.4	44.0	16.6	16.6
Fri., Mar. 8	125.0	91.4	44.0	16.7	16.7
Sat., Mar. 9	125.0	91.4	44.0	16.7	16.7
Height of low water to the nearest foot	125.0	91.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending March 20, 1912. (75th meridian time):

Date.	High	Low	High	Low
	A.M.	A.M.	P.M.	P.M.
March 14	12.27	6.45	1.20	7.25
March 15	1.33	7.41	2.08	8.13
March 16	2.20	8.27	2.44	8.52
March 17	2.58	9.06	3.16	9.27
March 18	3.31	9.41	3.48	10.02
March 19	4.03	10.16	4.19	10.36
March 20	4.37	10.50	4.53	11.10

The following vessels arrived at or departed from the port of Balboa during the week ending March 9:

Arrivals—March 4, *Ucayali*, from Callao; March 5, *Guatemala*, from Valparaiso; March 6, *Pennsylvania*, from San Francisco; March 9, *Cuzco*, from San Francisco; March 9, *Leelanaw*, from San Francisco; March 9, *Babcock*, from San Francisco.

Departures—March 4, *Pachitea*, for Callao; March 7, *Limari*, for Valparaiso; March 7, *Pleiades*, to San Francisco; March 8, *Aztec*, to San Francisco; March 9, *Manavi*, to Buenaventura; March 9, *San Juan*, to San Francisco; March 9, *Chile*, to Guayaquil; March 9, *Ucayali*, to Callao.

LOST—In Empire, on Friday, March 1, small, gold open-faced watch, with monogram, "C. D. C." Reward if returned to Room 3, House 133, Empire.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Allianca	P. R. R.	Wednesday	Mar.	6
Colon	P. R. R.	Wednesday	Mar.	13
Advance	P. R. R.	Tuesday	Mar.	19
Panama	P. R. R.	Tuesday	Mar.	26
Allianca	P. R. R.	Monday	April	1
Colon	P. R. R.	Monday	April	8
Advance	P. R. R.	Saturday	April	13
Panama	P. R. R.	Saturday	April	20
Allianca	P. R. R.	Friday	April	26

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Wednesday	Mar.	13
Allianca	P. R. R.	Tuesday	Mar.	19
Colon	P. R. R.	Tuesday	Mar.	26
Advance	P. R. R.	Monday	April	1
Panama	P. R. R.	Sunday	April	7
Allianca	P. R. R.	Sunday	April	14
Colon	P. R. R.	Saturday	April	20
Advance	P. R. R.	Friday	April	26
Panama	P. R. R.	Friday	May	3
Allianca	P. R. R.	Thursday	May	9

NEW YORK TO COLON.

Zacapa	U. F. C.	Wednesday	Mar.	6
Prinz Joachim	H.-A.	Saturday	Mar.	9
Sixaola	U. F. C.	Saturday	Mar.	9
Almirante	U. F. C.	Wednesday	Mar.	13
Prinz Sigismund	H.-A.	Saturday	Mar.	16
Carrillo	U. F. C.	Saturday	Mar.	16
Magdalena	R. M.	Saturday	Mar.	16
Santa Marta	U. F. C.	Wednesday	Mar.	20
Prinz August Wilhelm	H.-A.	Saturday	Mar.	23
Turrialba	U. F. C.	Saturday	Mar.	23
Metapan	U. F. C.	Wednesday	Mar.	27
Prinz Eitel Friedrich	H.-A.	Saturday	Mar.	30
Thames	R. M.	Saturday	Mar.	30
Tivives	U. F. C.	Saturday	Mar.	30
Zacapa	U. F. C.	Wednesday	April	3
Prinz Joachim	H.-A.	Saturday	April	6
Sixaola	U. F. C.	Saturday	April	6
Almirante	U. F. C.	Wednesday	April	10
Prinz Sigismund	H.-A.	Saturday	April	13
Trent	R. M.	Saturday	April	13
Carrillo	U. F. C.	Saturday	April	13

COLON TO NEW YORK.

Metapan	U. F. C.	Thursday	Mar.	14
Tivives	U. F. C.	Tuesday	Mar.	19
Thames	R. M.	Tuesday	Mar.	19
Prinz Joachim	H.-A.	Wednesday	Mar.	20
Zacapa	U. F. C.	Thursday	Mar.	21
Sixaola	U. F. C.	Tuesday	Mar.	26
Prinz Sigismund	H.-A.	Wednesday	Mar.	27
Almirante	U. F. C.	Thursday	Mar.	28
Thames	R. M.	Saturday	Mar.	30
Carrillo	U. F. C.	Tuesday	April	2
Blucher	H.-A.	Wednesday	April	3
Santa Marta	U. F. C.	Thursday	April	4
Prinz Eitel Friedrich	H.-A.	Wednesday	April	10

NEW ORLEANS TO COLON.

Atenas	U. F. C.	Saturday	Mar.	9
Orleanian	U. F. C.	Wednesday	Mar.	13
Parismina	U. F. C.	Saturday	Mar.	16
Cartago	U. F. C.	Wednesday	Mar.	20
Abangarez	U. F. C.	Saturday	Mar.	23
Heredia	U. F. C.	Wednesday	Mar.	27
Atenas	U. F. C.	Saturday	Mar.	30
Orleanian	U. F. C.	Wednesday	April	3
Parismina	U. F. C.	Saturday	April	6
Cartago	U. F. C.	Wednesday	April	10
Abangarez	U. F. C.	Saturday	April	13
Heredia	U. F. C.	Wednesday	April	17

COLON TO NEW ORLEANS

Abangarez	U. F. C.	Thursday	Mar.	14
Heredia	U. F. C.	Thursday	Mar.	14
Atenas	U. F. C.	Thursday	Mar.	21
Orleanian	U. F. C.	Thursday	Mar.	21
Parismina	U. F. C.	Thursday	Mar.	28
Cartago	U. F. C.	Thursday	Mar.	28
Abangarez	U. F. C.	Thursday	April	4
Heredia	U. F. C.	Thursday	April	4
Atenas	U. F. C.	Thursday	April	11
Orleanian	U. F. C.	Thursday	April	11

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prin Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 5 p. m.; ships for New York via Kingston on Tuesdays at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, MARCH 20, 1912. No. 30.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Acting Chairman's Report.

The report of the Acting Chariman of the Isthmian Canal Commisson for the month of February is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Borrow Pit Operations at Gatun Locks and Dam.

All of the dry filling now being placed at Gatun Dam and for backfill for the locks is supplied from borrow pits nearby, the use of material from Culebra Cut having been discontinued after February 14, simultaneously with the abandonment of the old double-tracked main line of the Panama railroad between the north end of the cut and Gatun. Since the completion of the work of steamshovels in the Atlantic entrance channel at Mindi, one of the shovels formerly there has been transferred to a borrow pit several hundred yards north of the seaward side of Gatun Dam. It began operations near the end of the old chute from which coal was loaded into lighters for the dredges at work in the lagoon west of the spillway discharge channel.

Another shovel is borrowing from the hill just north of the Atlantic Division offices, between the locks and the Panama railroad. This pit was begun on October 12, 1911, since which time 186,505 cubic yards of material have been taken from it. East of the lower end of the locks and advancing almost to New Gatun station, another shovel is loading cars with selected rock stored there two years ago for use in facing the lake side of the dam.

Most of the material, however, yet to be used will come from the pit in the hills at the west end of the dam. Four shovels are at work there now and the number will be increased. This pit was started at the end of a switchback track which ran up a 1 per cent grade from the spillway to the west end of the dam, and the rise in grade has been continued as the shovels advanced into the hills. The track now extends about 7,000 feet beyond the end of the dam and reaches elevation + 110. Having the material at such height and proximity effects considerable economy and expediency in placing it on the toes of the dam, which are well advanced to final height.

A part of the material from the west end pit goes on the south, or lake, toe of the west wing. Connection with it has been by means of track running down to the spillway, through the spillway channel, at elevation 50, and back up the other side of the wing, to an elevation which rises continually, being now about 85 feet above sealevel. In order to avoid these grades and distances a track is being built on a fill across the wing near the west end, where the toes of the dam enclose a row of small hills, the average elevation of which is about 95 feet above sealevel. The track passes over the tops of the knolls and on a trestle to the south toe. The trestle is being filled with puddled soft clay, which will form the watertight section instead of the wet material pumped in from the dredges. At various other points, particularly for the blanketing of the western ridge, puddled clay is to be substituted for the impervious hydraulic fill

Elevator for Cars of Concrete.

To facilitate the placing of concrete in the cellular approach wall at the upper end of Pedro Miguel Lock, an elevator has been erected at the outer end of the wall, on the axis of the center, to raise containers of concrete from the level of the ground as high as the final level of the wall. The elevator consists of a framework of heavy timbers, forming a shaft 6 feet by 7 feet 4 inches, and rising to a height of about 60 feet above ground, in which a platform is raised and lowered by a small steel cable, operating over a drum moved by a 20-horsepower, two-cylinder upright air driven engine, set on the ground about twelve feet from the side of the wall. The platform carries a ½-cubic yard Decauville dump car, running on an 18-inch track, and at a height of about twelve feet above the present levels of the cellular forms, a track is extended on trestle work from the elevator shaft, so that the cars may be wheeled along and dumped into chutes leading to the forms. The concrete is placed in the cars at the bottom of the shaft from a ½-cubic yard portable mixer, which is supplied from conveniently located stock piles of rock and sand and cars of cement. The mixer rested on the 30-foot solid section of wall at the outer end till that was raised to 24 feet above base, but above such a height it will be more feasible to use the elevator, than to of carry the ingredients up steep inclines to a mixer high above ground.

Record for 70-Ton Steamshovel.

On March 14, steamshovel No. 124, a 70-ton shovel of the Bucyrus make, loaded 290 small Western dump cars, containing a total of 2,900 cubic yards of material, in the working day of eight hours. During this period the shovel was delayed one hour and 50 minutes waiting for cars.

This is the highest daily output for a 70-ton shovel since the commencement of operations by the United States.

Concrete Work at Gatun Locks.

For carrying concrete from the auxiliary mixing plant east of the upper end of Gatun Locks to the sites of the cableways extending over the locks, a 3-foot gage railroad passed down the east chambers from the upper end. Passing over the sill of the caisson dam, at elevation + 37, the tracks went down an incline to the level of the floor at the emergency dam sill, through which it passed by means of a rectangular aperture, about 12 feet wide by 8 in height. This portion of the track has recently ben removed and relaid on a trestle running to the top of the emergency dam sill, instead of to the bottom, and the aperture has been filled with concrete, so that the sill is practically completed. The trestle is 250 feet long, with an up-grade from the caisson sill of 4 per cent, and is supported on trapezoidal bents, consisting of two upright timbers, 6 by 6 inches in section, and two similar timbers on the sides, battering in, 1 on 5. The bents are 10 feet apart and connected by two stringers, 8 by 16 inches in section. Crossties, 6 inches square, are spaced on 18-inch centers.

The end of the trestle will not be connected with the track on the floors of the chambers below, but may be used for carrying material for the finishing of the upper approach. The concrete remaining to be laid in the walls of the upper and middle locks will be placed by means of portable mixers, and that for the lower lock is placed directly by the cableways, which are supplied from the construction plant west of the locks. The track on the lock floors will remain for the present, for general convenience and for the passage of the two-car narrowgage train which is operated over it for the benefit of sightseers.

Cement Gun on Revetted Wall.

The coating of cement mortar applied by the pneumatic cement gun which was sent to the Isthmus a little less than a year ago for use in spraying the surface of certain rock faces in Culebra Cut, which disintegrated on exposure to air, was found not to prevent this disintegration. The concrete mixture sprayed on the smooth surfaces adhered uniformly, but was not sufficiently airtight to retard appreciably the progress of disintegration. The gun was used recently on the relocated line of the Panama railroad, in coating the surfaces of hand-laid revetment wall, made of hard Bas Obispo rock. In this case the concrete penetrated the interstices between the rocks as far as several feet and thus obtained a firm hold. Using a mixture of 1 part of cement to 3 of sand for the inner coating, and of 1 part of cement to 2 of sand for the final surfaces, it was practicable to

NOTES OF PROGRESS.

(Continued.)

lay a smooth, strong coat from 2 to 3 inches thick, over an area of about 25 feet square a day. The spraying was continuous. By the time the work had been carried from one end of the area under treatment to the other the first part was ready for another coat. In all, about 10,000 square feet of revetment was treated.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 84 per cent completed, 190,401 cubic yards, out of a total of 225,000, having been placed at the close of work on March 16. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
March 11	228	8.00	1
March 12	284	8.00	1
March 13	380	8.00	1
March 14	336	15.00	2
March 15	332	12.00	2
March 16	300	11.30	2
Total	1,860		
Previously reported	188,541		
Grand total	190,401		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending March 16, follows:

DATE.	Hours worked.	Cubic Yards.
March 11	3.05	1,730
March 12	3.15	1,700
March 13	4.30	2,050
March 14	3.55	1,770
March 15	3.40	1,886
March 16	4.40	1,877
Total	23.05	11,013

Ancon Crusher.

DATE.	Hours worked.	Cubic Yards.
March 11	12.30	3,777
March 12	12.05	3,448
March 13	12.20	4,649
March 14	11.25	4,055
March 15	7.50	2,946
March 16	10.10	4,193
Total	66.20	23,068

First Month of Postal Savings Bank.

A statement of Postal Savings Bank transactions at Canal Zone post offices for the period of February 2, to March 2. follows:

Name of Office.	Postal Savings Certificate Issued	Postal Savings Certificates Paid.
Ancon	$5,046.00	$447.00
Balboa	14,333.00	2,001.00
Bas Obispo	1,415.00	
Corozal	7,972.00	1,050.00
Cristobal	10,424.00	675.00
Culebra	13,178.00	1,497.00
Empire	10,790.00	276.00
Gatun	13,251.00	2,260.00
Gorgona	28,260.00	1,430.00
Las Cascadas	12,885.00	964.00
Matachin	315.00	161.00
Miraflores	4,530.00	361.00
Paraiso	4,201.00	392.00
Pedro Miguel	17,135.00	1,119.00
Cristobal Station A	220.00	45.00
Cristobal Station B	992.00	180.00
Total	$144,947.00	$12,858.00

The Sabanas Road.

It has been decided to resurface the road running from the city of Panama to the Canal Zone boundary, known as the Sabanas Road. The material required is estimated as 2,127 cubic yards of crushed rock, 710 cubic yards of screenings. Half of the road will be laid by sprinkling it with water before rolling, and the other half by sprinkling with road oil.

Ancon Study Club.

Twenty-five books have been added to the library of the Ancon Study Club. Owing to lack of suitable facilities for the library in the office of the District Quartermaster the books will be placed for the present in the home of Mrs. Mark White, House 31, Tivoli district. Members may exchange books at any time, and non-members are cordially invited to become subscribers. The art exhibit will be on view at Ancon Hall on Wednesday afternoon, March 21, from 1 to 5 o'clock. Residents and others interested will be cordially welcomed at any time during the afternoon.

CONCRETE WORK IN THE LOCKS.

Over 81 per cent of the concrete for the locks is in place, the amount at the close of work on March 16 being 3,421,273 cubic yards, out of a total of approximately 4,199,400. A total of 26,704 cubic yards of concrete was laid in the locks during the week ending March 16.

GATUN LOCKS.

Over 92 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on March 16 being 1,843,645 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending March 16, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 11	632	11.32	3	152	2.40			784
March 12	804	13.46	4					804
March 13	748	13.46	5					748
March 14	894	17.05	5					894
March 15	1,048	18.05	5					1,048
March 16	1,274	20.28	4					1,274
*Portable mixers				197*				197
Total	5,400	94.42		349	2.40			5,749
Previously reported								1,837,896
Grand total								1,843,645

*The 197 yards shown for the portable mixers are reinforced concrete and were placed on the following days: March 11, 53; March 12, 55; March 13, 0; March 14, 18; March 15, 44; March 16, 27;

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 98 per cent completed, 824,072 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on March 16. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 11	278	8.50	2	142	15.50	4		420
March 12	282	8.50	2	133	21.00	4		415
March 13	86	2.50	2	153	15.50	3		239
March 14	198	6.00	2	153	20.00	5		351
March 15	186	5.50	2	123	13.00	3		309
March 16	136	4.00	2	160	14.00	3		296
Totals	1,166	35.00		864	99.00			2,030
Previously reported							4,423	822,042
Grand total							4,423	824,072

MIRAFLORES LOCKS.

Over 55 per cent of the concrete for the system of two twin locks at Miraflores was in place on March 16, the total amount on that date being 753,556 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 11	2,626	58.33	8	794	13.00	2	545	43.50	7		3,965
March 12	2,318	59.00	8	770	12.00	2	413	43.17	7		3,501
March 13	1,414	49.83	8	820	13.50	2	515	48.42	7		2,749
March 14	1,650	51.33	8	448	7.42	2	546	45.92	8		2,644
March 15	1,146	33.33	8	778	12.83	2	636	52.33	8		2,560
March 16	2,186	58.99	8	738	11.50	2	582	48.00	8		3,506
Total	11,340	310.81		4,348	70.25		3,237	281.34			18,925
Previously reported										3,693	734,631
Grand total										3,693	753,556

EXECUTIVE ORDER.

Speed Law for Vehicles—Law of the Road.

By virtue of the authority vested in me, I hereby establish the following order for the Canal Zone:

Section 1. No automobile, motor cycle, or bicycle shall be driven or operated over the roads or streets of the Canal Zone at a speed exceeding fifteen (15) miles an hour on straight roads, or at a speeed exceeding eight (8) miles an hour when approaching or traversing curves, forks, or crossroads, or when traveling over the streets of any city, town, or village of the Canal Zone. The owner of an automobile, if within the car, shall be held responsible for its speed; in the absence of the owner, the person actually driving the automobile shall be held responsible. The person operating a motor cycle or bicycle shall be held responsible for its speed.

Section 2. In the operation or employment of automobiles, motor cycles, bicycles, carriages, wagons, and other vehicles over Canal Zone roads or streets, the following rules shall be observed, *viz:* All such vehicles, in meeting and passing other vehicles, or in being overtaken and passed by other vehicles, shall keep to the left of the road; and in overtaking and passing other vehicles they shall keep to the right. The owner of an automobile or other vehicle, if riding therein, shall be held responsible for the driving or operation thereof, agreeably to the provisions of this section; in the absence of the owner, the person driving or operating such vehicle shall be held responsible. In the case of any motor cycle or bicycle, the person operating same shall be held responsible.

Section 3. Any person violating any provision of this order shall be punished by a fine not exceeding One Hundred Dollars ($100.00) United States currency, or by imprisonment not exceeding thirty (30) days, or by both such fine and imprisonment, in the discretion of the court.

Section 4. The Executive Order of February 27, 1908, relative to the speed of automobiles on Canal Zone roads is hereby repealed.

Section 5. This order shall take effect thirty days from this date.

Wm. H. Taft.

The White House,
February 28, 1912.
[No. 1,489.]

Vacation Pay in Advance.

In The Canal Record of March 13, under the caption "Vacation Pay in Advance," the proposed resolution of the Commission is incorrectly made to read as follows:

> *Resolved,* That any employe of the Commission whose service terminates on or after October 1, 1912, whether by resignation or by discharge, at a time when he *was on* leave with pay due him under the regulations of the Commission, * * *

The resolution submitted by the Chairman to the Comptroller, and approved by him, reads:

> *Resolved,* That any employe of the Commission whose service terminates on or after October 1, 1912, whether by resignation or by discharge, at a time when he *has* leave with pay due him under the regulations of the Commission. * * * * * *

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Empire, C. Z., Sunday, March 24, 1912 at 6.00 p. m.

The next concert will be given at Corozal, March 31, 1912 at 5 p. m.

Lost—In Culebra on Friday, March 15, between the I. C. C. Hotel and the observation tower, gold open-faced Elgin watch. Finder will be rewarded on returning same to Y. M. C. A., Culebra.

CANAL WORK IN FEBRUARY.

Monthly Report of the Acting Chairman and Chief Engineer to the Secretary of War.

Culebra, C. Z., March 16, 1912.

The Honorable the Secretary of War,
Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of February, 1912:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	24,445	1,415,714	136,552	1,576,711
Work excavation, wet	Cubic yards	581,399	....	432,796	1,014,195
Total work excavation	Cubic yards	605,844	1,415,714	569,348	2,590,906
Plant excavation, dry	Cubic yards	....	12,642	....	12,642
Plant excavation, wet	Cubic yards	39,862	....	....	39,862
Total Canal Excavation	Cubic yards	645,706	1,428,356	569,348	2,643,410
Material placed in dams	Cubic yards	356,620	....	61,628	418,248
Concrete placed in locks and dams	Cubic yards	36,932	....	76,532	113,454
Explosives used	Tons (Gross)	102.91	205.10	30.91	338.92
Rock drilled	Feet	51,700	436,792	78,483	566,975
Tracks removed	Miles	....	9.21	....	9.21
New tracks laid	Miles	2.78	17.59	5.00	25.37
Rock crushed	Cubic yards	41,493	....	51,081	92,574
Cement used	Barrels	43,969	59	78,584	122,612
New roads built	Miles	0.31	....	....	0.31
Water mains laid	Feet	17,941	15,974	23,601	57,516
Sewers laid	Feet	2,652	431	1,938	5,021
Open drains and ditches dug	Feet	18,280	9,435	1,825	29,540
Average daily force	....	6,592	8,292	5,780	20,664
Average rainfall	Inches	2.10	0.91	0.20	1.01

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the Divison Engineers, the inspection being cared for by this subdivision. Work was continued on the grinding of fixed irons and preparing the valve chambers for the installation of the valves, which work is being done under supervision of this office. This subdivision is also charged with general inspection of the masonry work of all the locks.

LOCK GATES AND PROTECTIVE DEVICES.

Shop Work in the United States—Up to February 20, a total of 46 932 tons of structural steel had been accepted at the rolling mills, or about 92 per cent of the total, of which 1,505 tons were accepted between January 20 and February 20, and a total of 26,750 tons of riveted structural material was shipped from Rankin shops, or about 52 per cent of the total contract weight. Of this last item, 1,088 tons were shipped between January 20 and February 20. Over 3,000 tons of additional parts, finished up but not painted, remain in the yards of the contractors, the extreme cold making it undesirable to paint this material now. To replace the 1,490 tons of material lost on the steamship *Moldegaard*, about 278 tons have been shipped, this being in addition to the total quantity of material shipped, as given above.

The following are details of material shipped to February 20:

Gatun Locks—Upper guard gates, 4 leaves, 54 feet 8 inches high, Nos. 37 to 40, inclusive; all material shipped. Upper and middle gates, upper lock, 8 leaves, 77 feet high, Nos. 29 to 36, inclusive; all material shipped. Safety and lower gates, upper lock, 8 leaves, 77 feet high, Nos. 21 to 28, inclusive; completed and nearly all shipped. Middle and lower gates, middle lock, 8 leaves, 77 feet 10 inches high, Nos. 13 to 20, inclusive; about 18 per cent of the total has been shipped. Middle gates, lower lock, 4 leaves, 77 feet high, Nos. 9 to 12, inclusive; about 50 per cent built and about 10 per cent shipped. Lower guard gates, 5 leaves, 47 feet 4 inches high, Nos. 1 to 4, inclusive; about 55 per cent built, none shipped.

Pedro Miguel Lock—Upper guard gates, 4 leaves, 54 feet 8 inches high, Nos. 50 to 53, inclusive; all material shipped. Upper, safety, lower, and middle gates, 16 leaves, 79 feet high, Nos. 54 to 69, inclusive, and lower guard gates, 4 leaves, 47 feet 4 inches high, Nos. 70 to 73, inclusive; practically all manufactured and shipped.

Miraflores Locks—Practically none of this material has been manufactured or shipped. The manufacture of castings, handrailing and piping has proceeded satisfactorily.

LOCK GATE ERECTION.

Gatun—Upper guard gates, 54 feet 8 inches high, leaves Nos. 37 to 40, inclusive: The riveting of these leaves is practically completed except that in the way of falsework and castings at ends, also the riveting of footwalk, fender angles, etc. During the month the castings at the quoin end of leaf No. 38 were fitted with wedges about 7 panels high out of a total of 13, on both the up and down stream faces, and the holes for the $1\frac{1}{2}$-inch bolts through the end of leaves for securing these castings were drilled and the bolts fitted 11 panels high. On leaf No. 37 the grinding of the quoin end was completed and the contractor began to attach castings on February 16. The miter ends of leaves Nos. 37 and 38 are being ground for the reception of end reaction castings.

Upper gates, upper lock, 77 feet high, leaves Nos. 33 to 36, inclusive: Very little work was done on these leaves during the month. The inside riveting was practically completed. The reaming of the holes through the sheathing plates has been completed between the falsework frames for the entire height of the leaves and the sheathing has been riveted about 3 panels high on both the up and downstream faces of leaves Nos. 35 and 36; no riveting has been done in the sheathing of leaves Nos. 33 and 34.

Middle gates, upper lock, 77 feet high, leaves Nos. 29 to 32, inclusive: The framing of these leaves has been erected up to but not including the top girder.

Pedro Miguel—Upper guard gates, 54 feet 8 inches high, Nos. 50 to 53, inclusive. Very little work was done on these leaves during the month. The riveting of the sheathing progressed slowly.

Upper gates, 79 feet high, Nos. 54 to 57, inclusive: These four leaves have their framing erected to the top panel, but no reaming or riveting has been done.

Safety gates, 79 feet high, leaves Nos. 62 to 65, inclusive: The skeleton has been erected to the girder next to the top in all leaves. A small part of the riveting of the skeleton has been completed. No sheathing, castings, etc. have been placed on any of these leaves.

The total tonnage of lock gates erected on the canal to March 1, 1912, without regard to its being riveted or fully fitted, is about 9,832 tons, out of a total of 58,000 tons, or 17 per cent. The total rivets driven were 426,000 out of a total of 5,500,000, or 8 per cent.

LOCK GATE RECESS COVERS.

The material for a total of 46 recess covers, excepting the cast iron plates, has been received on the Isthmus and unloaded at Gatun. Material for 4 covers was delivered to the contractors for erection at Gatun, and 8 at Pedro Miguel. At Gatun 8 covers were practically riveted up; 2 other covers were assembled and partially riveted. The grouting of covers will not be done until the rack sections and rails are attached and fully aligned and leveled. At Pedro Miguel 8 recess covers have been assembled and one has been riveted up complete. Three other covers have been partially riveted.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection as follows:

(*1*) *For the rising stem and cylindrical valve machines purchased under circular 614*—The two trial machines are now on the Isthmus and the installation practically completed. Machine No. 261 was operated preliminarily by motor, without the connection of the valve stem, and machine No. 260 by hand, also with the stem not connected, and both machines were found to be properly installed. It is proposed to test the machines out completely after the valves proper and stems are in place. The test of motors being conducted on the Isthmus was continued throughout the month. The test on cylindrical valve machine No. 559, made in January, was continued during the month of February. While the results of similar leakage tests on this valve were not found to be consistent, the cause has been located, and similar tests will be conducted later on other valves. The Wheeling Mold and Foundry Company have arranged to ship the first cylindrical valve machine ready to replace the machine lost on the steamship *Moldegaard*, wrecked.

(*2*) *For the rack railway and other material purchased under Circulars 619, 635, 635-D, 647, and 666*—Out of the 30 items under these contracts, 10 are 90 per cent or more completed. The work progressed satisfactorily.

(*3*) *For the gate operating machines, Class 1, and miter forcing machines, Class 2, purchased under Circular 627*—No work was done on the installation of these machines, the same being held up owing to the work on miter gates not being completed. The completion of the second miter gate moving machine has been delayed twice on account of defects developing in a casting while being machined. On February 9, award was made to the Wheeling Mold and Foundry Company for 90 miter gate moving machines, to be delivered complete April 1, 1913.

The motors for the above machines are rapidly nearing completion and it is expected that they will go on official test during the coming month.

(*4*) Satisfactory progress was made on the gate and girder hoisting machinery for the Emergency Dams, purchased under Circular 616.

(*5*) *For the Gatun hydro-electric station, purchased under Circular 648*—Work progressed satisfactorily on various items of the three classes.

(*6*) *For electric towing locomotives purchased under Circular 650*—Working drawings are being prepared for Class 1, Item 1, one trial locomotive, at the works of the manufacturer; award has not been made for the balance of the locomotives.

(*7*) *For locomotive cranes, derricks and hoisting engines for erection plant of machinery and electrical equipment, purchased under Circular 662*—Two 15-ton locomotive cranes and auxiliary hooks and lines under Class 1, Items 1 and 2, were delivered on the Isthmus during the month. Contract has been made with the contractor for 4 additional cranes with auxiliary hooks and lines. All cranes to be delivered complete not later than April 25, 1912.

The force installing machinery and electrical equipment on the Isthmus during the month assembled 324 feet of towing track and 158 feet of track were "frozen" in place, consuming 30.1 cubic yards of concrete. This included the assembly of rack sections, channels, anchor bolts and bonding of "T" rails. There were 118.7 tons of locomotive track material distributed along the lock wall ready for assembly. For the return track a test section of conductor slot cover, a total length of 220 feet of straight track and 82 feet of curve, has been installed. Foundation bolts were set for 9 cylindrical valve machines, and 18 cubic yards of concrete were consumed in placing the same. The placing of bench marks and permanent center lines for the various machines throughout the locks progressed satisfactorily.

EMERGENCY DAMS.

The inspection work in the United States progressed satisfactorily during the month. Up to February 20, a total of 583 drawings of the turning and wedging machinery, and a large number of drawings covering structural parts were completed and approved. At the rolling mills and foundries, 74 tons of riveted nickle steel, 65 tons of riveted structural steel, 6 tons of forged steel castings, 71 tons of carbon steel castings, and about 50 tons of miscellaneous cast iron castings, vanadium wheels and vanadium steel castings, in all, about 266 tons of material, were fabricated and acepted during the month. Satisfactory progress has been made on the roller bearings, all the roller bearings for 4 complete dams having been manufactured and accepted to date.

AIDS TO NAVIGATION.

During the month, 6 acres of land were cleared in the Gatun Lake section for sites for beacons and reference buoys; 28,200 linear feet of trochas were cut, and the necessary land for making surveys was cleared and profile taken. The locations for 8 gas buoys were referenced during the month in the Gatun Lake section. Twenty-two acres of land were cleared in the Pacific Section.

Pacific Division. Range 9-11. The brass lantern frame and curved glass were placed in the front and rear towers.

Range 1-2. The spiral stairway in the rear tower was erected, thus completing the concrete work on that tower. The status of the front tower remains as reported last month.

Range 13-14. The entrance stairs, vestibule and spiral, and reinforced concrete stairways are erected, thus completing all the concrete work on both towers. The wooden doors and windows, except one window in the front and one in the rear tower, have been hung.

Atlantic Division. Range 5-6. The walls of the front tower were carried up to their final height of 74 feet to focal plane, and the rear walls to their final height of 48 feet to focal plane.

Range 21-22. The walls of the front tower were carried up to their final height of 30 feet 7 inches to focal plane, and the entrance steps and vestibule placed, thus completing all the concrete work in this tower.

Gatun Lake. Range 24-25. The foundation was placed and the tower walls were commenced for the front light. The foundations and base of the rear light tower were completed to a height of 7 feet above grade. All the material for these towers was delivered at the sites.

At the central plant at Balboa, 73 reinforced stair treads, 14 radial beams, 27 stair strings, 18 architrave moldings, 12 window lintels, and 13 window sills were cast during the month. The forms for the concrete beacons were constructed, and the casting of beacons will commence at once.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month two shovels were engaged on borrow pit excavation for the backfill, 77,361 cubic yards of material being removed.

Backfill—Backfilling behind the side walls of the middle and lower locks, and in the center wall of the middle lock, was continued. The backfilling in the center wall of the upper lock was completed. The quantity placed during the month aggregated 74,944 cubic yards, of which 18,775 cubic yards were placed in the center wall, increasing the total on March 1 to 1,274,542 cubic yards. A new estimate completed during February makes the total fill to be placed 1,748,475 cubic yards. The backfill on the basis of the new estimate was therefore 72.8 per cent completed on February 29.

Receiving and Issuing Material—The receipts of rock exceeded the consumption by 7,711 cubic yards, and the consumption of sand and cement exceeded the receipts by 6,620 subic yards and 3,065 barrels, respectively.

Mixing and Placing Plants—Both plants, and all portable mixers, were kept in satisfactory operation during the month.

Power Plant and Pumps—The operation of the power plant and pumps was satisfactory.

Iron and Steel Work—During the month 411.2 tons of fixed steel and 156,216 feet of reinforcing rods were placed; 26.9 tons of reenforcing rails and 34.4 tons of electric return track were laid.

Concrete Work—There was a decrease of 8,319 cubic yards in the amount of concrete laid as compared with the figures for the preceding month. The daily average for the 24 working days was 1,111 cubic yards, as compared with a daily average during January of

1,345 cubic yards. The working hours for all concrete mixing and placing plants were reduced on February 1 to a single shift. The total amount of concrete placed during the month was 26,664 cubic yards. The bucket measurement exceeded the place measurement by 754.5 cubic yards. Of the total concrete, 6,258 cubic yards were placed in the upper lock, 1,245 cubic yards in the middle lock, and 19,161 cubic yards in the lower lock. The concrete work for the entire lock system was 91.13 per cent completed at the end of February.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)..	8.57	8.50
Average number of hours per day worked, per strand of cableway, laying concrete and large rock (actual working time)......................	2.54	....
Average number of mixers per day......................	3.70	1.33
Average hourly output per mixer (actual working time), cu. yds.	60.87	75.22
Average amount of concrete and large stone laid per hour, per strand of cableway (actual working time) cu. yds........	34.73	....
Large stone laid, cu. yds.......	....	....
Concrete laid, cableways, cu.yds.	19,304	....
Concrete laid, crane and derrick cu. yds......................	1,742	....
Concrete laid, derricks, cu. yds...	....	5,152
Concrete laid, portable mixers...	....	1,220.5
Total amount of concrete and large stone laid, cu. yds.......	21,046	6,372.5

GATUN DAM.

Construction during the month increased the total fill, as determined by cross sections of the material in place, by 356,620 cubic yards, making the total amount in place, 18,080,353 cubic yards. On March 1 the dam was 84.25 per cent completed.

Hydraulic Fill—The dredges increased the hydraulic fill by 211,399 cubic yards. The total hydraulic fill in place February 29 was 9,152,594 cubic yards.

Dry Fill—The material received from the Central Division and steamshovels, amounting to 145,221 cubic yards, was placed on the north and south toes of the dam, east and west of the spillway, making the total dry fill in place 8,927,759 cubic yards.

GATUN SPILLWAY.

Excavation—During the month 1,228 cubic yards of rock were excavated by hand in preparing foundations, increasing the total on February 29 to 1,588,854 cubic yards.

Backfill—Backfilling was not extended during the month, the total remaining at 16,236 cubic yards.

Concrete—The work of placing concrete was continued. The amount placed during the month aggregated 10,268 cubic yards, including 64 cubic yards of large stone, which increased the total to 186,672 cubic yards. The concrete work for the spillway was 83 per cent completed.

HARBOR AND CHANNEL SECTION.

Excavation below Sealevel at Mindi—During the month one steamshovel removed 4,566 cubic yards of earth and 18,651 cubic yards of rock from the canal prism, completing the dry excavation on February 24, 1912.

Dredging from Ocean to Mindi—Seven dredges removed 540,471 cubic yards of earth and 40,928 cubic yards of rock from the canal prism. In addition, dredge *No. 4* removed 39,862 cubic yards of earth from pit, for spoiling dredged rock, at lock site, and derrick barge *No.1* removed 7,143 cubic yards of earth and 872 cubic yards of rock from the East Diversion at Mount Hope. On February 29, 40 feet of water could be carried from zero to zero plus 2,800 feet; 35 feet to Mile 3 plus 2,600 feet; 30 feet to Mile 3 plus 3,700 feet; and 20 feet to Mile 5 plus 2,438.9 feet, the point of intersection with the French Canal.

PORTO BELLO.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day, hours............	8.00
Average number of hours worked per day...	3.42
Average number of cubic yards per hour of working day........................	216.11
Average number of cubic yards per working hour..............................	505.21
Maximum day's output (4 hours 50 minutes) cu. yards......................	2,234
Average day's output (24 days) cu yds......	1,728.88
Average hourly output (132 hours 15 minutes) cu. yds........................	313.75

SAND, STONE, AND CEMENT SERVICE.

In connection with this service plant steamed 3,555 miles, handled 471 barges, and carried 1,910 passengers.

WEST BREAKWATER, COLON.

Forty-two thousand nine hundred and twenty-seven cubic yards of material were excavated, all of which was dumped from the trestle. The double track trestle was extended 503 linear feet. On March 1 the trestle extended 9,568 linear feet from shore. During the month 8,393 cubic yards of Porto Bello rock were placed on the breakwater, making a total of 32,788 cubic yards used for that purpose to March 1. The total amount of rock dredged and dumped on the west breakwater to February 1, 1912, was 879,605 cubic yards. During the month 40,928 cubic yards of rock were dredged and dumped, increasing the total to 920,533 cubic yards. The amount of dry fill placed to March 1 was 661,845 cubic yards.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Work was contined on the Colon street improvements.

Central Division.

During the month of February the total amount of material excavated in the Central Division was 1,428,356 cubic yards, of which 188,745 cubic yards were classified as earth and 1,239,611 cubic yards as rock. Of this quantity, 1,392,455 cubic yards were removed by steamshovels, 23,860 cubic yards by ranes, and 1,229 cubic yards by hand. Contractors removed 10,812 cubic yards by hand. Of the total, 1,415,714 cubic yards consisted of primary excavation for the canal prism, and 12,642 cubic yards was gravel removed and incline excavation outside of the prism.

The daily average number of steamshovels at work during the month was 43.75, and the total number of shovel days was 1,050, as compared with 41.92 at work during the month of January, with 1,090 shovel days.

For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'kg days.	Av. yards per shovel day
		Rock.	Earth.			
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
1911: Feb.....	1,600,597	1,150,353	450,244	48.43	23	1,436.80
1912: Feb ...	1,392,455	1,229,329	163,126	43.75	24	1,326.15

Rainfall at Empire: 1911, 0.55 ins.: 1912, 0.34 ins.

The above table shows the average output per shovel to be 7.70 per cent greater in February, 1911, than in the corresponding month of the present year.

The total amount of the material excavated from the prism in the Culebra Section of the Central Division in February, 1912, 1,349,569 cubic yards, was the highest record in that section for the month of February, except February, 1911, when 1,409,338 cubic yards were removed.

The total estimated amount of material to be removed in the Central Division, according to the revised estimate of July 1, 1911, was 101,801,296, and up to March 1, 1912, 88,287,021 cubic yards had been removed, leaving 13,514,275 cubic yards to be removed in order to complete all excavation in the Central Division. From these figures it will be seen that 86.72 per cent of all excavation in the Central Division had been completed up to the close of the month of February, and 13.28 per cent remained uncompleted.

Considering the two sections which compose the Central Division, the excavation completed and that to be completed at the close of February operations were as follows:

CULEBRA SECTION.	*Cu. Yds.*
Completed.........................	76,268,428
To be completed.....................	13,175,577
CHAGRES SECTION.	*Cu. Yds.*
Completed.........................	12,018,593
To be completed.....................	338,698

From the above figures it will be seen that the Culebra Section, locally known as the "Culebra Cut," was 85.27 per cent completed, with 14.73 per cent to be completed; the Chagres Section was 97.26 per cent completed, with 2.74 per cent to be completed.

During the month no material was dumped in the embankment for the new roadbed for the relocation of the Panama railroad, the total amount furnished for this purpose remaining at 4,146,793 cubic yards. The Central Division delivered at Gatun 96,456 cubic yards of rock and earth for use in the construction of the dam, making the total for this purpose at the end of February, 5,373,851 cubic yards. During the month 10,822 cubic yards of rock and earth were furnished for the Colon breakwater, and 23,047 cubic yards to the Pacific Division for backfill at Pedro Miguel Locks.

The daily average number of laborers at work on the whole division during the month was 7,495, and the daily average number of gold employes was 797.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

Excavation—The total excavation during the month amounted to 136,552 cubic yards, of which 51,786 cubic yards were classified as earth, and 84,766 cubic yards as rock.

Filling and Embankment—During February, 35,153 cubic yards of dry filling were added to the prism of the west dam at Pedro Miguel, increasing the total amount of material in place at the close of the month to 392,118 cubic yards. The backfill at Pedro Miguel was increased by 33,175 cubic yards, the total amount in place at the end of the month amounting to 533,231 cubic yards.

At Miraflores, 26,475 cubic yards were added to the dry fill in the toes of the west dam, increasing the total amount in place at the end of the month to 1,121,772 cubic yards. The backfill was increased by 35,170 cubic yards, the total aggregating 425,584 cubic yards at the end of the month.

Pedro Miguel Lock—Excavation of the

canal prism between the Pedro Miguel and Miraflores locks was commenced early in the month. The sopil, which is principally clay, was used for filling in the core of the west dam at Pedro Miguel by continuing the west toe toward the center of the dam. The east rock toe of the dam is being completed mainly with Lidgerwood trains of rock from the Culebra Cut. The amount of iron placed in the masonry aggregated 151,440 pounds.

Concrete Work—The total amount of concrete and large stone laid at Pedro Miguel was 12,639 cubic yards, as compared with 15,077 cubic yards during January. The concrete was placed as follows: 213 cubic yards in the northeast wing wall; 2,976 cubic yards in the north center guide wall; 1,541 cubic yards in the east wall; 817 cubic yards in the west wall; 3,746 cubic yards in the center wall; 375 cubic yards in the southeast wing wall; and 2,953 cubic yards in the floors.

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours)	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	4.74
Average number of mixers per day	6.04
Average bourly output per mixer (actual working time), Cu. Yds	15.63
Large stone laid, cubic yards	
Concrete laid, Cu. Yds	12,639.00
Total concrete laid, Cu Yds	12,639.00

Plant consisted of two 2-cubic yard mixers, a daily average of 4.04 ⅓-cubic yard mixers, and a daily average of 4.62 locomotive cranes and derricks.

Miraflores Locks—The McClintic-Marshall Construction Company commenced the reerection of chamber crane No. 3 in the east chamber of the lower lock on February 17. The reerection of this crane will complete their contract for dismantling two berm cranes and four chamber cranes at Pedro Miguel, moving and reerecting same at Miraflores, and adding a cantilever arm to each of the two berm cranes originally erected at Miraflores by the Wellman-Seaver-Morgan Company. The double track incline trestle from the upper to lower lock was completed and the serving of concrete to chamber crane No. 1 for constructing the center wall of the lower lock was commenced about the middle of the month. The concrete work for the west wall of the lower lock was also commenced at this time. Dry excavation in the lower lock and canal prism with five steam shovels, filling of east and west toes of west dam, and backfilling behind east and west walls of the upper locks were continued during the month. The work of sinking concrete caisson foundations for north center guide wall was continued. During the month the amount of iron placed aggregated 332,499 pounds.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (bours)	8.00 & 12.00	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	5.85	5.88
Average number of mixers per day	7.83	5.96
	Cu. Yds.	*Cu Yds.*
Average hourly output per mixer (actual working time)	37.32	24.23
Average amount of concrete and large stone laid per hour, per berm, or chamber crane (actual working time)	59.11	
Large stone laid		
Concrete laid	49,139.00	14,754.00

Permanent plant consisted of two berm cranes working 12 hours per day and two working 8 hours per day, and three chamber cranes averaging 1.92 units daily.

Auxiliary plant consisted of two 2-cubic yard mixers, four ⅓-cubic yard mixers, and a daily average of 1.96 locomotive cranes and derricks.

Concrete Work—The total amount of concrete and large stone laid at Miraflores was 63,893 cubic yards, as compared with 48,416 cubic yards during January. The concrete was placed as follows: 881 cubic yards in the north center guide wall; 32,832 cubic yards in the east wall; 10,622 cubic yards in the center wall; 11,116 cubic yards in the west wall; and 8,442 cubic yards in the floors.

DISTRICT NO. 2—DREDGING.

The following is a statement of the output of the five dredges which were in operation during the month, and of the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.		PLANT.		Total.	Remarks.
		Earth.	Rock.	Earth.	Rock.		
		Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	
Cardenas	Dipper	22,887	4,359			27,246	Place measurement
Marmot	Ladder	20,776	5,530			26,306	Place measurement
Badger	Ladder	23,653	23,937			47,590	Place measurement
Mole	Ladder	500	18,096			18,596	Scow measurement
Culebra	Suction	252,143				252,143	Scow measurement
Total		319,959	51,922			371,881	
Hydraulic excavation		*60,915				60,915	Place measurement
Grand Total		380,874	54,922			432 796	

*Excavated from Canal prism, south of Miraflores lock site.

CHAMÉ SAND EXCAVATION.

Approximately 48,389 cubic yards of sand were excavated at Punta Chame and delivered at Balboa.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Work was continued on the Panama street improvements.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day, hours	8.00
Average number of bours per day (actual working time)	6.09
Average number of cubic yards crusbed per hour working day	266.00
Average number of cubic yards crusbed per working hour	349.70
Total output for the month, Cu. Yds	51,081.00

Relocation of Panama Railroad.

During the month 158,355 cubic yards of material were excavated, increasing the total excavation at the close of the month to 10,098,192 cubic yards, and 170,057 cubic yards of material were placed in embankment, increasing the total for this purpose to 16,315,931 cubic yards.

The daily average number of steamshovels at work was 4.16, and the total number of working days was 24.

For comparison with the work done by steamshovels during the preceding month, and during the corresponding month of the previous year, the following table has been prepared:

Period	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'kg days.	Av. yards per shovel day.
		Rock.	Earth.			
1911:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
Feb.	256,615	180,600	76,015	6.22	23	1,795
1912:						1,406
Jan.	320,035	178,210	141,8 5	8 76	26	
Feb.	153,210	76,165	77,045	4.16	24	1,536

No temporary trestle was driven during the month. Work on bridges and culverts was continued. At the end of the month there was 73,816 linear feet of 70-pound and 110,816 linear feet of 90-pound track. The force averaged 1,198 men.

Quartermaster's Department.

LABOR.

The force report for the week ending Wednesday, February 28, shows that no permanent reduction in force has obtained to date. Although an occasional reduction in European labor has been made at some points, it has been found possible to place the laborers on other sections of the work.

QUARTERS.

A congestion in bachelor quarters for gold employes still obtains at Gatun, Gorgona, Pedro Miguel, and Corozal. At Gatun and Gorgona arrangements have been made to return one type 5 building at each place from non-housekeeping quarters to gold bachelor quarters.

MATERIAL AND SUPPLIES.

The congestion in shipping continued, and it was difficult to procure tonnage for transportation of material, particularly lumber and piling to the Isthmus, either on the Atlantic or Pacific side, it being found necessary to charter a special steamer which brought forward 3,168 pieces of piling which was urgently needed. The value of material received from the United States during the month was $852,817.84. Supplies during the month were delivered by 39 steamers, the total weight of cargo aggregating 36,824 tons, exclusive of 1,542,521 feet B. M. Douglas fir lumber, 343,294 feet B. M. yellow pine lumber, 117,599 feet B. M. white oak lumber, 5,063 pieces of piling, and 44,704 cross ties.

Subsistence Department.

The operation of the European laborer's messes, the colored laborers' kitchens and the "line" hotels showed a net profit of $2,606.15 The operation of the Hotel Tivoli showed a net profit of $14,785.10, and there was a net profits on restaurants, penitentiary, tugs, and dredges of $193.27. The net profit on subsistence operations was $17,584.52.

Department of Civil Administration.

COURTS.

During the month 13 civil and 44 criminal cases were disposed of in the Circuit Courts, and 249 civil and 636 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for February amounted to $418,419.65, and the fees to $1,991.56. Receipts from stamp and card sales, and newspaper postage aggregated $7,839.62. The total collection of revenues made by the Division was $16,820.90, and the collection on account of court fines, costs and fees, $3,064.99.

In accordance with Executive Order of September 8, 1911, a postal savings system was put into effect on February 1 at all money order post offices in the Zone. During the month $144,946.00 was deposited, and $12-858.00 withdrawn.

Twenty-three vessels entered at and 25 vessels cleared from the port of Ancon; and 24 vessels entered at and 21 vessels cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 619, of whom 567 were men and 52 women. Twenty-four nations, or 49 separate states and dependencies were represented. The total number of arrests for the month showed an increase of 47 as compared with the month of January. Twelve convicts were committed to the penitentiary, and 14 were discharged, leaving 149 in confinement at the close of the month. One convict died while in custody. The cost of guarding and subsisteing the convicts was $2,935.83, and the value of their work on Canal Zone roads $2,432.80.

DIVISION OF FIRE PROTECTION.

Forty-eight fires were reported in the Canal Zone during the month, as compared with 59 in January. The damage to Commission property was $335.80, and to private property $617.00.

DIVISION OF PUBLIC WORKS.

In the city of Panama the average daily consumption of water was 1,417,607 gallons, and in Colon 1,133,645 gallons.

The usual inspection and maintenance work of this division was performed during the month.

DIVISION OF SCHOOLS.

The net enrollment in the white schools during the month was 1,207, and the average daily attendance 971.8. or 93.6 per cent of the enrollment; and in the colored schools the net enrollment was 1,392, and the average daily attendance 745.4, or 80.5 per cent. Forty-six white and 28 colored teachers were employed in the division on February 29.

Department of Sanitation.

The total number of deaths from all causes among employes was 46. These were divided as follows: From disease, 29; and from violence, 17, giving the annual average per thousand of 6.66 and 3.91, respectively.

The annual average death rate per thousand among employes for the month of February in previous years since American occupation was as follows:

1905	14.05
1906	29.09
1907	30.74
1908	12.80
1909	9.42
1910	8.75
1911	9.88

The annual average death rate per thousand in the cities of Panama, Colon and the Canal Zone, including both employes and non-employes, was 16.33.

The annual average death rate per thousand for the month of February among the same class of population for previous years was as follows:

1905	42.07
1906	43.96
1907	36.07
1908	21.40
1909	18.59
1910	17.50
1911	18.60

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was, for whites, 4.61, blacks, 7.34, giving a general average of 6.66. For the same month during 1910, the annual average death reate per thousand from disease was, whites, 5.20, blacks, 4.59, giving a general average of 4.73, and for the same month during 1911, whites, 5.67, blacks, 6.47, giving a general average of 6.27.

Among employes during the month deaths from principal diseases were as follows: Nephritis, acute and chronic, 5; dysentery, clinical, 1; haemoglobinuric fever, 1; lobar pneumonia, 5; malaria fever, E. A., 1; tuberculosis, 4; typhoid fever, 1, leaving a balance of 11 deaths from all other diseases, and 17 deaths from external violence.

No cases of yellow fever, small pox, or plague originated on or were brought to the Isthmus during the month.

Respectfully,
H. F. HODGES,
Acting Chairman.

SOCIAL LIFE OF THE ZONE.

The Red Men of Empire will give a dance at Kangaroo Hall in that village on March 30.

United Spanish War Veterans.

The next regular meeting of the Chagres Camp No. 2 U. S. W. V.. will be held at Empire, on Sunday, March 31, at 2.30 p. m., in Kangaroo Hall. It will be a joint meeting of the U. S. W. V. and the Ladies Auxiliary.

All female nurses and all female relatives of men who served in the Spanish-American War, the Philippine insurrection, or the China expedition are eligible to membership in the auxiliary and are invited to attend this meeting and become charter members. Refreshments will be served.

Knights of Pythias.

On Sunday, March 24, the Canal Zone lodges, Knights of Pythias, will meet in Ancon. During the forenoon a baseball game, free to everybody, will be played between Ancon lodge No. 8 and Cruces lodge No. 9, and Ancon lodge will serve luncheon to all Knights and their families in the Ancon hall immediately after the game

Obituary.

Henry Vanderschmidt, aged 24 years, an enlisted man in the Marine Corps, stationed at Camp Elliott, died at Ancon Hospital on March 15, from typhoid fever. His home was at 323 East 24th street, New York City.

Joseph V. Sadler, a powder foreman, was killed on the night of March 17, by being thrown from the platform of a Panama railroad passenger train as it was rounding a curve north of Corozal. He was 43 years old, a native of New York City, and had been in the employ of the Commission since September 1, 1906. He is survived by his wife, living at Pedro Miguel.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on March 27. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m., on March 27, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

OFFICIAL CIRCULARS.

Admission to Taboga Sanitarium.

DEPARTMENT OF SANITATION,
ANCON, C. Z., March 16, 1912.

On and after this date, employes and members of their families wishing to go to Taboga Sanitarium for a few days, and who at the time are not patients in Ancon or Colon Hospital, are requested to make their applications to the district physician of their home station at least twenty-four hours before the sailing of the Taboga boat, which leaves its wharf at Balboa on Tuesdays, Thursdays, and Saturdays at 9 o'clock a. m.

Applications sent in after this time cannot be considered.

By direction of the Chief Sanitary Officer.

JOHN L. PHILLIPS,
Assistant Chief Sanitary Officer.

Express Service to San Francisco.

CULEBRA, C. Z., March 15, 1912.

ALL CONCERNED:

The Pacific Mail Steamship Company has inaugurated an express passenger and freight service between Balboa, Los Angles and San Francisco, making the run in from twelve to thirteen days. The steamships *City of Para*, *Pennsylvania*, and *Aztec* have been placed on this run, the two former carrying first-class passengers and freight, and the latter freight only. The passenger steamers will leave Balboa and San Francisco approximately once a month.

The regular cabin fare, Balboa to Los Angeles or San Francisco, will be $85.00. Commission employes will be granted the reduced rate of $60.00, which is now in force on the coastwise vessels. The coastwise service will be continued in connection with the express service.

By direction of the Acting Chairman.

Respectfully,
C. A. MCILVAINE, *Chief Clerk.*

PANAMA CANAL BASEBALL LEAGUE.

RESULT OF GAMES, MARCH 17.

At Colon—Com.-Sub., 6; Ancon, 1.
At Empire—Empire, 6; 10th Infantry, 11.

STANDING OF CLUBS.

	P.	W.	L.	P.C.
Com.-Sub.	10	7	3	.700
Ancon	11	7	4	.636
Empire	10	6	4	.600
10th In'ty.	11	2	9	.182

SCHEDULE FOR MARCH 24.

At Ancon—Ancon. vs. 10th Infantry.
At Empire—Empire vs. Com.-Sub.

GAME AT EMPIRE, MARCH 17.

Empire.	AB.	H.	PO.	A.	E.
VanZ't,lf	4	3	1	0	0
Clements,rf	5	0	0	0	0
Maguire,1b	5	1	13	0	1
Herring,c	5	2	8	0	1
Murphy,cf.	5	1	0	0	0
Bryan,ss	3	1	3	6	1
Toone,3b	4	0	0	2	2
Ridge,2b	4	0	1	0	0
Marshall,p.	4	3	1	3	2
Totals	39	11	27	11	7

Infantry.	AB.	H.	PO.	A.	E.
Deleh'ty,rf	5	0	2	0	0
Cassidy,ss.	4	1	2	4	1
Smith,cf.	4	1	2	1	1
Tricky,c	5	3	9	1	0
Weber,2b	5	1	2	1	3
Laugner,1b	5	1	6	0	1
Skerris,3b	4	0	2	1	0
VanOtt'n,p	5	2	0	2	0
Lucas,lf	5	0	1	1	0
Totals	42	9	26*	11	6

Empire	0	0	4	0	0	2	0	0	0—6
Infantry	2	0	0	0	5	0	0	4	0—11

Runs—Empire: Van Zandt, Herring, Murphy, Bryan, Marshall (2); Infantry; Delehanty (2), Cassidy (2), Smith (3), Tricky, Weber, Laugner, Van Ottman Earned runs—Empire 3, Infantry 2. Two base hits—Smith, Van Ottman, Van Zandt, Bryan, Marshall 2. Three base hit—Herring. First base on balls—off Marshall 1, off Van Ottman 1. Struck out—by Marshall 7, Van Ottman 8. Left on bases—Empire 8, Infantry 6. Wild pitch—Marshall 1. Passed ball—Herring. First base on errors—Empire 4, Infantry 6. Hit by pitcher—Skerris and Weber. Time of game—2 hours. Stolen bases—Marshall, Tricky (2). Umpire—Scull. Scorer—Lieutenant Stutesman.

GAME AT COLON, MARCH 17.

C.-S.	AB.	H.	PO.	A.	E.
Buch'an,cf.	5	2	0	0	0
Curtis,2b	5	2	8	4	0
Mosher,ss.	3	0	2	2	0
Weiss,1b	4	1	6	0	1
Sullivan,lf.	4	1	0	0	0
Herring,3b.	4	3	2	1	1
Beard,rf	4	1	5	0	0
Sterner,c	4	1	4	1	0
Davis,p	4	1	0	5	0
Totals	37	12	27	13	2

Ancon.	AB.	H.	PO.	A.	E.
Lindberg,rf	4	1	0	0	0
Edwards,2b	4	1	3	3	0
Drennan,lf.	3	0	1	0	0
Guptil,cf	4	1	2	0	0
Potter,ss	4	0	6	5	1
Pear'an,3b.	3	1	1	2	1
Nygren,1b.	4	1	8	1	3
Hodnot,c	2	1	3	1	0
Russell,p	3	0	0	3	0
Totals	31	6	24	15	5

Com.-Sub	0	5	0	0	0	0	0	1	x—6
Ancon	0	0	0	0	1	0	0	0	0—1

Runs—C.-S.: Buchanan, Weiss, Herring, Beard, Sterner, Davis; Ancon: Potter. Earned runs—Com.-Sub. 5. Two-base hits—Sterner, Buchanan, Curtis. Sacrifice flies—Pearman. Stolen bases—Curtis 2, Weiss, Herring, Beard 2, Drennan. First base on errors—Com.-Sub. 2, Ancon 4. Base on balls—off Russell 1, off Davis 2. Struck out—by Russell 2, by Davis 4. Balk—by Russell 1. Left on bases—Com.-Sub. 8, Ancon 5. Double plays—Davis to Curtis to Weiss; Herring to Curtis; Edwards to Nygren. Umpire—Brill. Time of game—1.40. Scorer—Bullard.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

A pool and billiard league has been organized and the following officers selected: F. L. Pack, president; Gus Gustavson, secretary. Each clubhouse will be represented by a four-man pool team and a two-man billiard team. The opening games will be played on March 30.

The Isthmian Y. M. C. A. Duckpin League for the year 1912, has been organized and the following officers chosen by delegates representing the clubhouses: A. H. Pinney, president; C. G. Wurster, secretary; G. A. Barte, scorer. The opening games will be played on Saturday, April 13.

CULEBRA.

Two hundred and seventy people attended the entertainment given by the Empire Minstrel Troupe on Friday evening, March 15.

Any who desire to take up the study of Spanish on Saturday evenings, either advance or beginners, can learn particulars by interviewing the secretary.

The Isthmian duckpin tournament will begin in the second week of April. All desiring to try for the team should come out and practice.

The Culebra boys went to Corozal on Saturday, March 16, and defeated the Corozal boys in a game of outdoor baseball, score 6 to 5.

EMPIRE.

The Empire Minstrel Show will play at Las Cascadas on Thursday night, March 21 and at Gorgona, Saturday. March 23.

Gymnasium classes have started and will meet twice weekly until further notice.

GORGONA.

There were 295 people present at the moving picture shown on Saturday, March 16.

The following games were bowled in a duckpin match game on Saturday night, March 16 between Gorgona and Camp Elliott.

Camp Elliott.				Gorgona.			
Weight	110	86	81	Rankin	74	77	87
Swartz	73	92	80	Berman	83	84	86
Synnott	80	80	75	Burmaster	69		
Kritel	81	93	94	Wright	75		
Stock	74	91	67	Orr	102	71	70
				Demmy		86	77
				Halderman		76	86

The Empire Minstrels will appear at Gorgona on Saturday night, March 23. Reserved seats are on sale. Admission 50 cents, members free.

The school children of Gorgona will give an entertainment at the clubhouse on Friday night, March 22 at 7.30 o'clock. C. E. Jennings will have charge of the music and Miss Grace McRae of the general program.

GATUN.

The Gatun Bowling League was organized on Monday evening, March 11, with the following teams: Beavers—Barte (Capt.). Teall, Hodges, Carr, Delgado. Algonquins—Huttlemaier (Capt.), T. Smith, Jewell, C. R. Hughes, Wilson; Sure Shots—De Poorter (Capt.), Wells, Ourand, Abernathy, Hughes; Stars—Severn, (Capt.), Wurster, Gailliard, Crowell, Gamble, R.; Tigers—Dickson (Capt.), Vierbuchen, Walter, Coleman, Gayer. Lucky Strikes—DeMoll (Capt.), Green, Luckey, Ottman, Long; Ruf Nex—Galloway (Capt.), Bailey, Sisson, Dennis, Brown.

The first game of the tournament was played on Friday evening, March 15, when the "Algonquins" took three games from the "Lucky Strikes" with the following scores: "Lucky Strikes—411, 396, 421. Algonquins —413, 417, 451.

Gatun took two out of the three games from a team from Gorgona on Saturday evening, March 16. Following is the score:

Gorgona.... 432 427 403 Gatun...... 409 433 413

The indoor base ball game between Empire and Gatun, which was to have been played at Gatun on Saturday evening, March 16, was played at Camp Eliott in order that the base ball players might also participate in the athletic meet. Empire won from Gatun with a score of 24 to 7. The lineup was as follows: Empire—Alley, Greening, Giovelli, Doran, Adams, King, Koperski. Gatun—Dickson, Thompson, Dalton, Kerrnish Wright, Atkins, Whiston.

G. K. Weston of Cristobal sang and H. F. Bronson of Gatun played at the moving picture entertainment on Tuesday, March 12.

One hundred and twenty-five books were ordered from the States during the past week.

CRISTOBAL.

An audience of 311 saw the moving picture show on Monday, March 11.

On Saturday night the Culebra indoor baseball team defeated the Cristobal team by the following score, Culebra—Cushing, 6 runs; Adams, 6 runs; Hepler, B., 3 runs; Tupper, 1 run; Hepler, H., 2 runs; Mengel, 3 runs. Cristobal—Schwalenberg, 2 runs; Russell, 1 run; Bielaski, 1 run; MacSparran, 1 run; France, 1 run; Cleary (5 innings), Couseneau, Levy (4 innings). Score, Culebra 21, Cristobal 6.

The subject for discussion at the session of the Literary and Debating Club to be held March 27, will be resolved that "The Announcement of the Candidacy of Mr. Roosevelt is a Mistake."

The Empire Minstrels have been booked for an appearance on Saturday evening, March 30. A good program is assured. Admission, members free, others 50 cents.

On Friday night, March 22 there willl be a smoker to which all the men of Cristobal are cordially invited.

The following is the standing to March 16 in the local bowling contest:

	Won.	Lost.	P. C.
Pirates	14	4	.777
Phillies	11	4	.733
Reds	12	6	.667
Giants	7	8	.467
Cardinals	8	10	.441
Cubs	7	11	.388
Doves	6	12	.333
Dodgers	2	10	.167

Rainfall from March 1 to 16, 1912, Inclusive.

Stations.	Maximum in one day.	Date.	Total for period.
	Ins.		*Ins.*
Pacific Section			
Ancon	.01	2	.01
Balboa	.00	....	.00
*Miraflores	.00	....	.00
Pedro Miguel	.02	2	.02
Rio Grande	.02	2	.03
Central Division—			
Culebra	.02	2	.02
*Camacho	.04	2	.04
Empire	.01	2	.01
Gamboa	.10	2	.10
*Juan Mina	.05	2	.07
Alhajuela	.02	2	.02
*El Vigia	.06	2	.08
*Gorgona	.02	2	.02
Frijoles	.06	3	.10
*Monte Lirio	.09	2	.14
Atlantic Section—			
Gatun	.18	11	.45
Brazos Brook	.08	11	.30
Colon	.33	11	.57
Porto Bello	.04	4-9	† 23

*Standard rain guage—readings at 5 p. m. daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5.00 p. m., March 15.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending March 27, 1912. (75th meridian time):

Date.	High	Low	High	Low	High
	A.M.	A.M.	P.M.	P.M.	P.M.
March 21	5.11	11.25	5.26	11.47	......
March 22	5.47	P.M. 12.02	6.02	......	......
March 23	......	A.M. 12.25	A.M. 6.24	12.40	6.42
March 24	......	1.06	7.06	1.21	7.24
March 25	......	1.52	7.52	2.09	8.14
March 26	......	2.47	8.49	3.10	9.14
March 27	......	3.53	10.00	4.27	10.32

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, March 16, 1912. All heights are in feet above mean sealevel.

Day and Date.	Station.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Mar. 10	124.9	91.3	43.9	17.0	16.8
Mon., Mar. 11	124.9	91.3	43.9	17.0	16.9
Tue., Mar. 12	124.9	91.2	43.9	17.1	17.0
Wed., Mar. 13	124.8	91.2	43.9	17.2	17.0
Thurs., Mar. 14	124.8	91.2	43.9	17.2	17.1
Fri., Mar. 15	124.8	91.2	43.9	17.2	17.1
Sat., Mar. 16	124.8	91.2	43.9	17.2	17.2
Height of low water to the nearest foot	125.0	91.0	44.0		

LOST—A gold medal pin, engraved "Vici," on Sunday night, March 17, between House 145-A and Gatun depot. Reward for return to Mrs. B. D. Pitcher, House 145-A, Gatun.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Colon	P. R. R.	Wednesday	Mar.	13
Advance	P. R. R.	Tuesday	Mar.	19
Panama	P. R. R.	Tuesday	Mar.	26
Allianca	P. R. R.	Monday	April	1
Colon	P. R. R.	Monday	April	8
Advance	P. R. R.	Saturday	April	13
Panama	P. R. R.	Saturday	April	20
Allianca	P. R. R.	Friday	April	26

CRISTOBAL TO NEW YORK.

Colon	P. R. R.	Tuesday	Mar.	26
Advance	P. R. R.	Monday	April	1
Panama	P. R. R.	Sunday	April	7
Allianca	P. R. R.	Sunday	April	14
Colon	P. R. R.	Saturday	April	20
Advance	P. R. R.	Friday	April	26
Panama	P. R. R.	Friday	May	3
Allianca	P. R. R.	Thursday	May	9

NEW YORK TO COLON.

Almirante	U. F. C.	Wednesday	Mar.	13
Prinz Sigismund	H.-A.	Saturday	Mar.	16
Carrillo	U. F. C.	Saturday	Mar.	16
Magdalena	R. M.	Saturday	Mar.	16
Santa Marta	U. F. C.	Wednesday	Mar.	20
Prinz August Wilhelm	H.-A.	Saturday	Mar.	23
Turrialba	U. F. C.	Saturday	Mar.	23
Metapan	U. F. C	Wednesday	Mar.	27
Prinz Eitel Friedrich	H.-A.	Saturday	Mar.	30
Thames	R. M.	Saturday	Mar.	30
Tivives	U. F. C.	Saturday	Mar.	30
Zacapa	U. F. C.	Wednesday	April	3
Prinz Joachim	H.-A.	Saturday	April	6
Sixaola	U. F. C.	Saturday	April	6
Almirante	U. F. C.	Wednesday	April	10
Prinz Sigismund	H.-A.	Saturday	April	13
Trent	R. M.	Saturday	April	13
Carrillo	U. F. C.	Saturday	April	13
Santa Marta	U. F. C.	Wednesday	April	17
Turrialba	U. F. C.	Saturday	April	20
Prinz August Wilhelm	H.-A.	Saturday	April	20
Metapan	U. F. C.	Wednesday	April	24
Arcadian	R. M.	Saturday	April	27

COLON TO NEW YORK.

Prinz Joachim	H.-A.	Wednesday	Mar.	20
Zacapa	U. F. C.	Thursday	Mar.	21
Sixaola	U. F. C.	Tuesday	Mar.	26
Almirante	U. F. C.	Thursday	Mar.	28
Prinz Sigismund	H.-A.	Monday	April	1
Carrillo	U. F. C.	Tuesday	April	2
Trent	R. M.	Tuesday	April	2
Blucher	H.-A.	Wednesday	April	3
Santa Marta	U. F. C.	Thursday	April	4
Turrialba	U. F. C.	Tuesday	April	9
Prinz August Wilhelm	H.-A.	Tuesday	April	9
Metapan	U. F. C.	Thursday	April	11
Prinz Eitel Friedrich	H.-A.	Monday	April	15
Oruba	R. M.	Tuesday	April	16
Tivives	U. F. C.	Tuesday	April	16

NEW ORLEANS TO COLON.

Parismina	U. F. C.	Saturday	Mar.	16
Cartago	U. F. C.	Wednesday	Mar.	20
Abangarez	U. F. C.	Saturday	Mar.	23
Heredia	U. F. C.	Wednesday	Mar.	27
Atenas	U. F. C.	Saturday	Mar.	30
Orleanian	U. F. C.	Wednesday	April	3
Parismina	U. F. C.	Saturday	April	6
Cartago	U. F. C.	Wednesday	April	10
Abangarez	U. F. C.	Saturday	April	13
Heredia	U. F. C.	Wednesday	April	17
Atenas	U. F. C.	Saturday	April	20
Orleanian	U. F. C.	Wednesday	April	24

COLON TO NEW ORLEANS

Atenas	U. F. C.	Thursday	Mar.	21
Orleanian	U. F. C.	Thursday	Mar.	21
Parismina	U. F. C.	Thursday	Mar.	28
Cartago	U. F. C.	Thursday	Mar.	28
Abangarez	U. F. C.	Thursday	April	4
Heredia	U. F. C.	Thursday	April	4
Atenas	U. F. C.	Thursday	April	11
Orleanian	U. F. C.	Thursday	April	11

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prin Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 5 p. m.; ships for New York via Kingston on Tuesdays at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, MARCH 27, 1912. No. 31.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Dredge Corozal Arrives.

The twin screw ladder dredge *Corozal* arrived at Balboa at 10 o'clock on Wednesday morning, March 27, and will at once prepare for its work of under water excavation in the Pacific entrance of the Canal. The *Corozal* left Falmouth, England on December 29, and was thus 88 days in making the voyage of approximately 12,000 miles by way of the Strait of Magellan.

Inundation of Pit Through Mindi Hills.

When the steamshovels had finished excavation for the Canal channel through the hills at Mindi, the removal of the dike which separated the pit from the waters of the sea was undertaken as outlined in THE CANAL RECORD of January 10, 1912. The top of the dike was only a few feet above the water but rose about 45 feet above the bottom of the pit which it protected from inundation. Blasting began at the inner base, and as the rock was blasted to successive levels the water was allowed to enter through pipes which had previously been placed. On the morning of March 15, when the difference between water levels on the sides of the dike was about 20 feet, a channel about 8 feet wide and 2 feet deep was cut into the dike near its west end. By noon of March 17 the pit was filled. A considerable portion of the barrier above water remains to be blasted, after which the dredges will proceed to remove the rock and earth, which amount to about 400,000 cubic yards.

In all of the Atlantic entrance section, between deep water in Limon Bay and Gatun Locks, there remain approximately 10,000,000 cubic yards to be excavated.

Duplication of Compressors for Gate Erection.

In order to supply the air-driven tools, such as reamers, rivetters and calkers, to be used by the additional crew with which the McClintic-Marshall Company is doubling its forces on the locks at both the Atlantic and Pacific sides of the Isthmus, the compressor plants at Gatun and at Pedro Miguel are being augmented by the installation of new machinery of duplicate capacity. Each of the plants has now two units, capable each of compressing 550 cubic feet per minute to a pressure of 105 pounds to the square inch. The new machinery, having the same capacity, consists of two units of double-stage Ingersoll-Rand Imperial compressors, belt-driven by a 100-horsepower induction motor, supplied direct from the 2,200-volt transmission lines of the Commission. The 4-inch main lines by which the air is carried to the sites of gate erection are designed so that air will be delivered at the tools under a pressure not less than 85 pounds to the square inch.

Steamshovel Work in Culebra Cut.

On March 21st, 22 steamshovels working in the Culebra Construction District of the Central Division, excavated 40,305 cubic yards or earth and rock, principally the latter, during the working day of eight hours, an average of 1,832 cubic yards per shovel during the period in question. The shovels were under steam for an aggregate period of 176 hours; they were actually digging 117 hours and 5 minutes; waiting for cars 50 hours and 15 minutes; held up by mining 1 hour and 25 minutes; cleaning track 20 minutes; cleaning dipper 30 minutes; repairing shovel 2 hours and 35 minutes; moving back 40 minutes; derailment 10 minutes; slides 2 hours and 10 minutes.

Close of Auxiliary Mixing Plant at Gatun.

The auxiliary mixing plant, situated east of the upper end of the Gatun Locks, has been closed down and the machinery will be dismantled and transferred to the Division of Fortifications. The construction of this plant began in October, 1909 and it began to operate during the last days in December. Since that time it has supplied 410,594 cubic yards of concrete or about 22.52 per cent of the total amount placed in the locks since concreting operations began. It did its last work on March 11, when 152 cubic yards of concrete were mixed by it.

The plant consists of two 2-cubic yard mixers, direct-connected to a 60-horsepower induction motor. The motor replaced the original steam engine, which was put out of service by the impact of a car of sand which jumped the track above, leading to the hoppers, and broke through the roof of the engine house. The highest daily record made by the plant was 1,552 cubic yards, on November 16, 1910, and the highest weekly record was 7,884 cubic yards, for the week ending October 29, 1910. The highest monthly record was 30,639 cubic yards, for the month of October, 1910.

With the exception of the concrete supplied by ½-yard portable mixers for tunnel construction and for use in setting machinery and towing and return tracks, the remainder of the concrete to be used in the construction of the Gatun Locks will be supplied by the construction plant, which at present operates from three to five of its eight 2-yard mixers. The concrete for the completion of the spillway dam will be supplied by the spillway mixing plant.

Sale of Supplies.

Proposals have been invited for the purchase from the Commission of supplies which are no longer needed. These consist of obsolete and obsolescent equipment which has been collected in the storehouses of the Depot Quartermaster and some new goods of which there is an amount on hand in excess of the obvious needs of the Commission. They are divided into twenty-five classes and comprise hand tools, light and heavy hardware, hotel and household supplies, miscellaneous equipment, track material, shop tools and equipment, clubhouse, sanitary, printer's and surveyor's supplies, electrical and marine equipment, stationery supplies, plumber's and gasfitter's materials, rolling stock, including 24 old French locomotives, machinery, including crushers, drills, pumps, vertical and horizontal stationary engines, 48 boilers, old French surveying instruments, five 45-ton steamshovels; four 68-ton steamshovels, and parts for them, and all American steel and iron shop scrap from the Commission's and the Panama Railroad Company's shops which may be delivered to contractor within a period of three years from date of contract, to be bid for in anticipation by the long ton of 2,240 pounds.

Bids will be received at the office of the General Purchasing Officer in Washington, D. C., not later than April 24, 1912.

Emptying Lagoon South of Miraflores Locks.

The dike across the Pacific entrance channel, a mile south of the hydraulic pressure plant and a slightly greater distance north of the dock at Balboa, has been completed and the water in the lagoon formed between it and a dike thrown across the flats, about 800 yards south of the lower end of Miraflores Locks, will be pumped out so that the monitors may continue the excavation in that section of the channel. All the work done in this portion heretofore had been subaqueous excavation by dredges, which have been withdrawn toward the Pacific to complete the channel between the dike and the deep sea.

To accomplish the removal of the water, one of the centrifugal pumps used in connection with the sluicing by the monitors has been installed in a sump just north of the dike nearest the lock site, The base of the pump is about 20 feet below mean sealevel and a 20-inch intake pipe has been laid at this level, through a trench, since filled in, to the bottom of the lagoon within the dike. The water will be forced through about 1,500 feet of

NOTES OF PROGRESS.

(*Continued.*)

pipe to the diverted channel of the Rio Grande, passing beneath the sand track several hundred yards south of its junction with the Pacific Division dirt train tracks. No relay station will be required, as the pump is capable of forcing 10,000 gallons of water a minute through 1,200 feet of pipe to a height of 60 feet, while the rise in this case will not be over 30 feet. The pump is driven by a 655-horsepower induction motor, direct-connected and protected by a waterproof case. The motor is ventilated by a fan driven by a 4-horsepower induction motor.

The sump is so placed that after the water has been removed from the lagoon the pump will be in position to remove the material sluiced from the adjacent area by monitors, and the discharge pipe empties at a point from which, by the connection of a hundred feet of additional pipe, it will carry silt beyond the bulkhead confining the swamp area east of the Rio Grande next to be filled. Several weeks will be required for emptying the lagoon, which is approximately a mile long, five hundred feet wide and of a maximum depth of 23 feet.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 85 per cent completed, 192,117 cubic yards, out of a total of 225,000, having been placed at the close of work on March 23. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
March 18	284	9.00	2
March 19	304	14.00	2
March 20	288	14.00	2
March 21	288	16.00	2
March 22	292	16.00	2
March 23	260	8.00	1
Total	1,716		
Previously reported	190,401		
Grand total	192,117		

Porto Bello Crusher.

DATE.	Hours worked.	Cubic Yards.
March 18	4.30	1,850
March 19	4.10	1,896
March 20	4.40	1,882
March 21	4.15	1,862
March 22	4.15	1,872
March 23	3.50	1,904
Total	26.40	11,266

Ancon Crusher.

DATE.	Hours worked.	Cubic Yards.
March 18	11.40	4,145
March 19	11.25	4,417
March 20	10.50	4,140
March 21	11.55	4,277
March 22	12.50	4,378
March 23	9.35	4,336
Total	68.15	25,693

Progress on Washington Hotel Building.

Since the recent arrival of a considerable supply of material, work on the new Washington Hotel at Colon is being pushed. The foundation has been completed and columns to support the superstructure in the front part of the building are being erected. The materials last received consist mostly of reinforcing steel, lumber for concrete forms, floretyle, and metal lath. Concrete is supplied by a ½-yard portable mixer. Grading the esplanade along the sea front continues and all but about a hundred feet of the twenty-foot concrete pavement along the seawall, from opposite Christ Church-by-the-Sea to the swimming pool, has been laid.

Dry Season Fires.

One of the prevalent dry season forest fires completely destroyed over 15 acres of cacao and rubber trees on the Empire plantation of the Cascadas Estates Company Limited and set fire to patches in 18 acres of adjacent area during the night of March 16-17. A body of Canal employes, went to the assistance of the manager of the plantation, and the thirty laborers with whom he was cutting trochas and backfiring. The total loss was estimated at between $4,500 and $5,000.

CONCRETE WORK IN THE LOCKS.

Over 82 per cent of the concrete for the locks is in place, the amount at the close of work on March 23 being 3,448,881 cubic yards, out of a total of approximately 4,199,400. A total of 27,608 cubic yards of concrete was laid in the locks during the week ending March 23.

GATUN LOCKS.

Over 92 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on March 23 being 1,849,689 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending March 23, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 18	1,126	18.45	4					1,126
March 19	1,150	19.02	5					1,150
March 20	796	13.07	3					796
March 21	922	15.14	4					922
March 22	726	12.16	4					726
March 23	946	16.08	4					946
*Portable mixers				378				378
Total	5,666	94.32		378				6,044
Previously reported								1,843,645
Grand total								1,849,689

*The 378 yards shown for the portable mixers are reinforced concrete and were placed on the following days: March 18, 26; March 19, 117; March 20, 49.5; March 21, 61.5; March 22, 49; March 23, 75.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 98 per cent completed, 824,072 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on March 16. The record for each of the six 8-hour working days of last week, follows:

DATE	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 18	160	5 00	2	239	25.50	5		399
March 19	150	4.50	2	112	12.00	4		262
March 20	204	6.00	2	116	12.50	3		320
March 21	272	8.50	2	167	21.50	4		439
March 22	100	3.50	2	202	20.75	4		302
March 23	16	.50	2	267	23.00	4		283
Totals	902	28.00	2	1,103	115.25	4		2,005
Previously reported							4,423	824,072
Grand totals							4,423	826,077

MIRAFLORES LOCKS.

Over 55 per cent of the concrete for the system of two twin locks at Miraflores was in place on March 23, the total amount on that date being 753,556 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 18	2,150	54.00	8	926	14.00	2	778	63.75	9		3,854
March 19	1,572	51.33	8	756	11.50	2	797	59.75	8		3,125
March 20	1,680	50.33	8	814	12.50	2	688	49.75	7		3,182
March 21	1,568	45.00	8	896	12.50	2	748	53.92	8		3,212
March 22	1,444	41.33	8	924	12.00	2	693	51.75	8		3,061
March 23	1,618	42.16	8	954	13.50	2	553	46.00	7		3,125
Total	10,032	284.15	8	5,270	76.00	2	4,257	324.92	7.83		19,559
Previously reported										3,693	753,556
Grand total										3,693	773,115

LARGEST LABOR TRAIN

Pacific Division Train Carries 2,000 Workers.

The labor train for the Pacific Division which leaves Panama at 5.45 in the morning and, returning, leaves Pedro Miguel at 5.15 p. m., is the largest labor train ever operated for the Canal work. It contains 15 cars and carries an average number of passengers estimated at about 2,000. Two cars, and half of another, are for "gold" employes, four and a half are for European laborers and eight are for negroes. Each of the cars for the "gold" employes carries about 60 to 70 men. These cars are seldom crowded but those for the "silver" employes are packed tightly. On one occasion the conductor, gathering data for estimates of carrying capacity, made a careful count of the number of negroes in a car and found it to be 164. The evening train is not so crowded as the one in the morning. Upon the arrival of the evening train at Panama, seven cars are detached and sent back to Pedro Miguel, bringing in the rest of the men to Panama about 7 p. m.; but in the morning there is only one train out. The seven cars of the late evening labor train are returned to the outer end as part of the one morning labor train and all of the men who occupied 22 cars in the evening go out in 15 cars in the morning.

The cars of this train are of two types. One is a flat car, covered with a corrugated metal roof supported on stanchions at about seven feet above the floor and provided with protecting timbers extending along sides and ends between the uprights. The other is a box car, with apertures for passage and windows cut in the sides and ends. Benches extend along the two sides and in the center of the car is a long double bench, or two benches, back to back, facing outward. By this arrangement the seating capacity of the car is doubled, as it has been found in regular passenger traffic that lengthwise benches afford greater seating room than cross-seats. The first class coaches of the Panama railroad, which are 61 feet in length, using cross-seats, seat 72 persons; the second class coaches, 45 feet long but using lengthwise seats, have a seating capacity of 87. With standing room utilized, a first class coach can carry without danger about 104 persons, a second class coach about 140. The cars of this labor train approximate 34 feet in length, outside measurement. They are among the largest labor cars in use on the Isthmus, though smaller kinds of old passenger and box cars are often assigned to labor use.

It is asserted by some of the railroad men on the Isthmus that this labor train is not only the largest labor train but that it carries more passengers than any other regularly operated train in the world. While such statements are generalities, no one on the Isthmus has been known convincingly to contradict them. It is no unusual thing for Sunday trains on the Panama railroad, with from 12 to 14 passenger cars, to carry between 1,000 and 1,400 passengers; and these are regarded as very large trains.

The labor train is drawn by a single locomotive of the Mogul type, weighing about 62 tons. Each of the six drivers is 54 inches in diameter; and the wheels of the pony truck, which carries 15,000 pounds, are 30 inches in diameter. The diameter of the cylinders is 19 inches and the piston stroke is 24 inches. Under its maximum steam pressure of 180 pounds to the square inch, the locomotive is capable of exerting a tractive power of 23,960 pounds at 10 miles an hour on a straight track. There are no severe grades on the run, the maximum being not greater than 1 per cent. The train makes the run of about 6½ miles, with 11 stops, in approximately 30 minutes.

Railway Mail Clerk Examination.

Examination will be held at Culebra probably the first Sunday in May for appointment to the position of railway mail clerk in the United States. Applicants should request from this office a copy of Form 1407, which contains all the information published in regard to this examination. Applications will not be received after the close of business on April 12; this date may be changed in the discretion of this office.

In this examination rigid requirements obtain in regard to age, height, and weight, and applicants should have the medical certificate executed by the district physician at Culebra or at Ancon or Colon hospitals, at which places are adequate facilities for proper physical examination.

This examination is given in two grades or degrees of difficulty of the subjects thereof, dependent upon the residence of the applicants as shown in answer to question 4 of the application. Such residence must therefore be shown in a State or Territory of the United States, and county thereof, up to the time of filing application. The date of examination should be *omitted* in the application form.

JOHN K. BAXTER,
Secretary, Isthmian Civil Service Board.
Culebra, C. Z., March 22, 1912.

Water Tank South of Miraflores Locks.

The water tank which was erected south of Miraflores Locks and burst on March 6, shortly after being filled, has been reerected. The bursting was due to the expansion of the timbers of the shell when wetted by the filling of the tank, and in the new construction fourteen ½-inch steel rods, spaced from four to twenty inches, in accord with the distance from the bottom, have been substituted for the former belts around the tank, which were about 3 inches wide and 1-5 of an inch in thickness. The tank, which has a capacity of 10,000 gallons, is supported with its bottom about 15 feet above the ground on 12 vertical foot-square timbers, resting on pyramidal concrete bases arranged in double rows of four, crossing at right angles and forming the outlines of a Greek cross.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the two weeks ending March 23:

Minnesota, March 11, from Bridgeton, Del, with 7,000 cases dynamite, for stock.

Allianca, March 12, from New York, with 12 cases stove polish, 64 cases sales books, 10 barrels compound 10 bales oakum, 52 pigs lead, 30 bundles sheet iron, 2,075 kegs nails, 18 reels wire rope, 66 pieces switches and frogs, 500 pieces steel bars, 100 cases soap, 10 cases food choppers, 11 cases mop handles, 60 cases lye, 15 cases packing, 16 cases crockery, for stock; and a miscellaneous cargo, the whole consisting of 2,117 packages weighing 215 tons.

Zacapa, March 14, from New York, with 40 cases hose, 18 bales life preservers, 500 cases linseed oil, for stock.

Atenas, March 14, from New Orleans, with 250 kegs red lead, 10 cases vermillion, 100 pieces piling, 2,785 pieces lumber, for stock; 1,344 pieces lumber, for Mechanical Division; 52 bundles spillway castings, 48 pieces spillway castings, for Pacific Division; 315 bags dairy feed, for stock.

Ancon, March 15, from New York, with 160,996 bags cement for Atlantic and Pacific Divisions; 218 pieces lock castings, 16 barrels lock castings, 6 bundles lock castings, for Atlantic Division; 436 pieces lock castings, 32 barrels lock castings, 12 bundles lock castings, for Pacific Division.

Student, March 16, from Liverpool, with 2 pieces chains, for Pacific Division.

Sixaola, March 16, from New York, with 500 bundles shovels, 41 kegs washers, 17 cases brass tubing, 63 crates wheelbarrows, 80 cases paint, 7 cases stationery, for stock; 400 pieces brake beams, for Mechanical Division; 76 cases copper bars, 50 crates anchor belts, 29 cases rods, for Pacific Division.

Prin Eitel Friederich, March 18, from New York, with 75 coils manila rope, 5 reels wire rope, for stock.

Mackinaw, March 19, from San Francisco, with 2,725 bales hay, 8 drums carbon bisulphide, for stock.

J. L. Luchenbach, March 18, from New York, with 114 cases blasting caps, for stock; 105,958 bags cement, for Atlantic and Pacific Divisions.

Colon, March 19, from New York, with 15 pieces valves, 14 cases electrical material, 8 cases hardware, for Atlantic Division; 53 cases brake shoes, 7 cases electrical material, 100 barrels sand, for Mechanical Division; 23 barrels starch, 12 cases drugs and sundries, for Sanitary Department; 32 cases bolts, 12 kegs washers, for Panama Railroad Company; 10 cases steel, 34 bundles sash cord, 25 crates chairs, 120 bundles steel bars, 10 cases lubricating oil, 50 coils manila rope, 229 packages wheelbarrows, 31 barrels rosin, 25 cases paint, 10 cases cardboard, 10 cases envelopes, 43 bundles bar iron, 24 packages hand cars, 24 cases wrapping paper, 25 bundles pipe, for stock; and a miscellaneous cargo, the whole consisting of 1,176 packages, weighing 160 tons.

Buckminster, March 20, from Baltimore with 45,836 pieces duct tile, 129 bundles rack castins, 68 cases valve machine parts, 9 pieces valve machine parts, 38 bundles valve machine parts, for Atlantic Division; 76 cases valve machine parts, 23 bundles valve machine parts, 17 pieces valve machine parts, 156 bundles rack castings, 153,982 pieces duct tile, for Pacific Division.

Tanhow, March 20, from New Orleans, with 150 barrels fire brick, for Panama Railroad Company; 400 kegs white lead, 2,932 pieces lumber, for stock; 859 pieces lumber, for Mechanical Division.

Parismina, March 21, from New Orleans, with 17 packages derricks and engines, for Fortifications; 26 bundles castings, 24 pieces castings, for Pacific Division; 1,307 pieces lumber, for Mechanical Division; 64 pieces piling, 2,891 pieces lumber, 60 pieces switch stands, 75 sacks sucrene feed, 10 cases paint, 22 crates plumbing supplies, 10 barrels wire clamps, for stock.

Almirante, March 21, from New York, with 21 cases files, 17 crates buckets, 60 cases varnish, 25 cases water coolers, for stock.

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to January 31, 1912, follows:

PERIODS.	Department of Civil Administration	Department of Law	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total
To June 30, 1909	3,427,090.29	....	9,673,539.28	69,622,561.42	78,022,606.10	....	160,745,797.09
Fiscal year, 1910	709,351.37	....	1,803,040.95	26,300,167.05	2,863,088.83	....	31,675,648.20
Fiscal year, 1911	755,079.44	....	1,717,792.62	27,477,776.19	3,097,959.72	....	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,089,361.82	312,920.11	....	2,615,340.33
August, 1911	74,768.45	1,878.27	156,954.79	2,287,506.30	355,087.42	86,243.14	2,962,438.37
September, 1911	64,905.24	1,805.83	146,912.23	2,212,702.66	234,233.58	86,275.56	2,746,835.10
October, 1911	64,143.49	1,586.71	152,252.71	2,751,377.24	323,154.80	32,061.45	3,324,576.40
November, 1911	66,491.92	2,502.39	138,404.22	2,346,719.44	200,614.00	93,952.56	2,848,684.53
December, 1911	66,013.49	1,854.62	143,745.59	2,467,291.16	316,891.32	60,794.07	3,056,590.25
January, 1912	74,737.19	2,581.53	114,637 59	2,228,910.21	451,899.54	148,983.75	3,021,749.81
Total	5,375,476.10	14,736.70	14,184,915.81	139,784,373.49	86,178,455.42	508,310.53	246,046,268.05

NEW STEEL PLANT.

Converter Installed at Gorgona Foundry to Make Steel Castings.

A new steel casting plant has recently been added to the Mechanical Division equipment at the Gorgona Shops. The purpose of this installation, primarily, was for the manufacture of steel castings as they are required on the construction work, so as to prevent any accumulation of cast steel repair parts carried in stock by the Quartermaster's Department, as well as to avoid the usual delays on United States contracts.

An investigation of the amount of steel castings ordered, and other parts now being made of cast iron, wich, if made of steel, would be more economical, shows that with the skilled force employed the Commission can manufacture steel castings at no greater cost than is charged in the United States.

This new equipment consists mainly of a Tropenas steel converter, having a nominal capacity of two tons, complete with an electric tilting mechanism, a high pressure blower provided with a 75 horsepower motor, a double roller sand crusher and mixer, a 4-ton crane ladle, two 2-ton crane ladles, eight 150-pound hand ladles, and two fuel oil ladle-heaters together with necessary fire brick, and gannister, for the lining of the converter.

One of the two cupolas already installed is used for the melting of the charge before it is transferred to the converter; the other cupola, which is of 10-ton capacity, is still used for making iron castings. The new 25-ton overhead Niles crane, electrically driven, is used for handling all large molds and ladles in the new steel foundry, a recent extension to the old foundry building.

While the converter is of a nominally 2-ton capacity, three tons can be converted if necessary; four heats can be made, which will permit the pouring of a 12-ton casting. Three blows are made and set aside, while the fourth one is in progress; all four heats can then be poured into the same casting.

The converter is supported on trunnions, one of which is hollow and forms a duct for the air, connecting the wind box at the back of the converter. This enables the air to be kept on continuously while the position of the converter is being changed. The other trunnion is extended and carries a worm wheel, which through suitable gearing, is connected to a 4-horsepower motor; a hand wheel is also provided for making small movements of the vessel as required from time to time, and in cases of emergency when the motor is out of commission.

The blower is of the positive pressure type, and is capable of maintaining a constant pressure of from 3 to 5 pounds during the process of blowing the steel. An operating station is provided near by where the operator stands to watch the progress of the blow and to tilt the converter according to the different requirements of charging and pouring; the air pressure, which is regulated by means of a by-pass valve, can be read on a mercury gauge, which is attached to the blast main between the blower and the by-pass.

During the time the cupola has been charged and the iron melted, the converter has been heated to a high heat by means of an oil burner apparatus arranged through the tuyeres.

As soon as the iron is tapped out from the cupola, the oil burner is removed, the tuyeres cleaned out, and the converter tilted to receive the transfer of the metal. The converter is then tilted back until the top of the metal is level with the bottom of the tuyeres, and the vessel approximately in a vertical position. The plate is then clamped on the wind box, the blower started and the by-pass valve closed.

At the beginning, sparks and smoke come out of the mouth of the converter and go up the chimney with a large adjustable hood to allow the crane to handle the ladle from the cupola to the converter. In from 2½ to 5 minutes, the sparks change and a flame appears at the mouth of the converter; when this flame is well established the converter is advanced one turn of the hand wheel to again bring the metal to the bottom of the tuyeres after the slag has been blown off. During the next few minutes the flame increases in brightness and volume until what is known as the "boil" occurs. The flame changes in color until it becomes particularly bright and clear and dies down for the last time with an evolution of copious brown smoke. The operator then throws over his controller, turning down the vessel into a horizontal position, which now contains a bath of practically pure iron. The necessary elements for the desired quality of steel are then added and a new metal is ready for the molds. For large castings it is sometimes necessary to allow the metal to cool before pouring, while for small castings, the metal is immediately poured from the large ladle into smaller hand ladles and transferred directly to the moulds.

Samples of steel are then taken for analysis by the Testing Engineer. The various methods for the analysis of the steel, as well as the description of special apparatus to facilitate the performance of the analytical work are so widely distributed through transactions of societies, journals and reviews that no further comment is necessary.

M. J. J. Worn, Metallurgical Engineer, of the Tropenas Company, has been sent by that company to the Isthmus for three months to instruct the foundry foreman and see that satisfactory results are obtained in the manufacture of steel castings. Steel was first made on January 31, 1912, and the present demand for steel castings indicates that the output will be about twenty tons per month.

Excavation in Gatun Anchorage Basin.

Excavation of the fill across the anchorage basin at Gatun, on which the Panama railroad crossed the bottomland of the Gatun River before the relocated line was put in use, was begun on March 27, when the Central Division set one steamshovel at work. The fill will be dug down to elevation 35 feet above sea-level between the hill at Gatun and the Gatun River, and the material will be cast over into the lake. This will give 40 feet of water over the old fill, when the lake is at normal elevation.

Postal Business and Revenues.

The total value of money orders issued in Canal Zone postoffices during the month of February was $418,419.66 of which $346,660.28 was payable in the United States, which includes European orders, $70.527.50 in the Canal Zone, $1,037.10 in Martinique, and $183 in Costa Rica. The number of orders issued was 20,455, the average value being therefore about $20 each. The postage sales amounted to $7,826.21 gross and $4,695.73 net.

Internal revenue receipts amounted to $6,914.92 of which $46 were in bicycle and chauffeur licenses, $108.41 in insurance; $49 in motor cycle vehicle licenses, $506.90 steamboat inspection; $7.20 distillation taxes; and $6,197.41 in taxes, licenses, etc., under the deputy collectors of revenues.

Out-Patient Eye, Ear, Nose, and Throat Clinic.

Hours for the examination and treatment of cases not patients in Ancon and Colon hospitals, effective March 22, 1912:

All Week Days—2 p. m. to 4.30 p. m. Morning hours are reserved for hospital work and there will be no morning out-patient office hours except by appointment and for emergency cases.

Sundays and Holidays—9 a. m. to 10.30 a. m. These hours are for emergency cases and cases by appointment. Examination for glasses is not an emergency.

Misdirected Letters.

ANCON, C. Z., March 27, 1912.

The following insufficiently addressed letters originating in the United States and its possessions have been received at the office of the Director of Posts and may be secured upon request of the addressees:

Barrett, Harry S
Blessley, Samuel E
Brower, Joseph
Brown, Mrs. J. S.
Butcher, A. M. (2)
Calcote, T. L.
Carkett, S. C.
Carter, Chas.
Comstock, Miss Mabel
Conway, E.
Cooper, Mrs. Fred
Cottrell, B.
Cox, Wm.
Crawford, John D.
Croll, Harry
Feoley, W. H.
Fisk, Clinton
Folsom, Richard
Gannon, H. E.
Gause, Mrs. N. T.
Gayer, W. C.
Guinther, John H.
Hilder, James
Jarvis, Mrs. Grace
Keffer, Glen
Kernan, Mr. & Mrs. J. C.
Mitchel, Guy
Nohle, Mrs. F. C.
Pederesn, Anart H.
Phillips, Dr. B. A.
Plummer, E.
Prior, Benjamin F.
Reeves, John
Sargeant, John
Shaner, Mrs. G. E.
Smith, L. D.
Smith, Forrest L.
Swinehart, Miss Helen
Tate, Master Earl G.
Thirlwall, W. S.
Tilton, Ernest
Weir, J. E.
Westcott, F. M.

LETTERS UNCALLED FOR MARCH 20.

Barnett, James C.
Brooks, John
Cleary, John M.
Cochen, Franck S.
Dunn, Oscar T.
Fernandez, J.
Fleckstein, John
Forbes, John F.
Fowler, R. F.
Gardner, Harold B.
Greecey, Mrs.
Gove, J. A.
Hellburg, H.
Hiscock, H. P.
Mason, Mrs. Hortense
McConnell. William
McDonald, M. A.
McLaney, Wood
Norland, Mrs. E. S.
Patterson, Geo.
Plunkett, Mathew J.
Small, Walter
Townsend, James E.
Udry, J. W.
Wright, Joseph M.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending April 3, 1912. (75th meridian time):

DATE.	High	Low	High	Low
March 28	......	A.M. 5.08	A.M. 11.24	P.M. 5.52
March 29	Mid. 12.00	6.26	P.M. 12.45	7.05
March 30	A.M. 1.16	7.32	1.50	8.06
March 31	2.17	8.29	2.43	8.59
April 1	3.09	9.18	3.30	9.44
April 2	3.54	10.04	4.12	10.28
April 3	4.36	10.47	4.52	11.10

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Corozal, C. Z., Sunday, March 31, 1912, at 5.00 p. m. The program follows:

1. March—*Boys of the Militia*............Boehlein
2. Selection—*The Prince of Pilsen* (by request)..............Luders
3. Waltz—*The Druid's Prayer*.............Davson
4. Overture—*Guy Mannering*...............Bishop
5. A Melody—*Wild Rosebud*...............Tobani
6. (a)—*Indian Medicine Dance*..........Bellstedt
   (b)—*Chicken Reel*.........................Daly
7. Descriptive—*A Hunt in the Black Forest*...Voelker
   Synopsis—Break of day. The singing of birds. Huntsmen's call to arise and prepare for chase. Chimes in the distance. Call to assemble. They mount and start. Call to dismount as they arrive at the forest blacksmith shop. The smith at work. Call to assemble. They assemble, then drink and sing the drinking song. They remount and start again. The hounds scent the game, the chase starts in full cry, finally overhauling the game.
8. Medley Selection—Haviland's Hits.........Halle
9. March—*The Midshipman*...........Laurendeau

CHAS. L. JENNINGS, *Musical Director.*

The next concert will be given at Paraiso, April 7, at 2.00 p. m.

CANAL MEDAL LIST.

Below are published the names of American employees of the Isthmian Canal Commission, who have completed two years of continuous service on the Isthmus during the twelve months ending December 31, 1911 and are in consequence entitled to receive a Canal Medal. The date shown opposite each name is that from which medal service is completed.

The list is now published in order that it may be carefully checked by those interested.. Any omissions, errors in spelling of names, or in the dates from which service is reckoned, should be promptly reported to the Office of the Chairman, at Culebra, for correction.

The Medal list covering employees of the Panama Railroad will appear in a later issue, as well as the bar lists for both I. C. C. and P. R. R. employees.

The Heads of divisions are requested carefully to check their lists of American employees on the silver roll, and to report any omissions on the medal or bar lists to the above office.

Name.	*Date.*
1909.	
La Roche, John S	Jan. 1
Nelson, Olof	Jan. 1
Burn, Archie H	Jan. 2
Burn, William J	Jan. 2
Dow, George C	Jan. 2
Skinner, Albert H	Jan. 2
Woodford, Earl T	Jan. 2
Bartlett, William J	Jan. 4
Walton, Edwin	Jan. 4
Webster, Arthur J	Jan. 4
Wilson, John W	Jan. 4
Erickson, Charles	Jan. 5
Murphy, Eugene I	Jan. 5
O'Brien, John	Jan. 6
Smyth, John R	Jan. 6
Wilson, Albert S	Jan. 6
Fletcher, Fred E	Jan. 7
Dockery, Harry	Jan. 8
Elliott, Carl H	Jan. 8
Kosier, Frank R	Jan. 8
Lucas, James J	Jan. 8
Sloan, Samuel	Jan. 8
White, Walter R	Jan. 8
Harrison, Robert W	Jan. 9
Snyder, Henry	Jan. 11
Ward, John	Jan. 11
Ray, Charles R	Jan. 12
Beecroft, Albert A	Jan. 13
Green, George W	Jan. 13
Loud, Dexter C	Jan. 13
Schourup, William	Jan. 13
Van Dine, Paul B	Jan. 13
Black, James D	Jan. 14
Brower, Joseph G	Jan. 14
Brugge, William	Jan. 14
Eaton, Harold I	Jan. 14
Gedney, Ralph	Jan. 14
Owen, Wesley M	Jan. 14
Shea, Mary M	Jan. 14
Bashner, Julius F	Jan. 15
Kinard, Amos	Jan. 15
Kent, William E	Jan. 18
Dixon, Clyde A	Jan. 19
McClain, Fred R	Jan. 19
Spearman, Edward	Jan. 19
Brown, George C	Jan. 20
Fisher, Edwin M	Jan. 20
Riley, George B	Jan. 20
Howard, Charles A	Jan. 21
Mitchell, Frank J	Jan. 21
Clark, Thomas	Jan. 22
Elder, Ralph M	Jan. 22
Louch, Louis A	Jan. 22
Treiber, J. G. B	Jan. 22
Van Houten, David	Jan. 22
Watson, Charles T	Jan. 22
Williams, Leroy G	Jan. 22
Charnley, Thomas H	Jan. 25
Hamill, Michael	Jan. 25
Barber, Charles W	Jan. 26
Dullahan, Benedick F	Jan. 26
Fitch, Fred R	Jan. 26
Howard, George E. L	Jan. 26
Larsen, Christian	Jan. 26
Hoff, George S	Jan. 27
Keyes, Harry C	Jan. 27
Bernhardt, John E	Jan. 28
Brennan, Earl C	Jan. 29
Wright, Arthur W	Jan. 29
Lindell, John	Feb. 1
Molloy, John	Feb. 1
Wardlaw, James L	Feb. 1
Barnes, T. W	Feb. 2
Bluhm, Herman W	Feb. 2
Byrne, Joseph L	Feb. 2
Gronbech, Victor	Feb. 2
Howe, Charles H. R	Feb. 2
Johnson, Olof W	Feb. 2
Jones, Hartwell B	Feb. 2
Matthews, James	Feb. 2
Woodward, Maxwell E	Feb. 2
Brown, John M	Feb. 3
Speers, James	Feb. 3
Olson, Gustav E	Feb. 4
Walton, Harvey L	Feb. 6
Billington, Herbert S	Feb. 7
Harlan, Orla K	Feb. 7
Jackson, C. M	Feb. 7
Smith, Elbert O., Jr	Feb. 7
Watt, John M. G	Feb. 7
Wieben, John J. D	Feb. 9
Betterton, Edward L	Feb. 10
Downes, Olive	Feb. 10
Neal, Charles H	Feb. 11
Carkeet, George E	Feb. 12
Warrick, James M	Feb. 12
Duvall, Frederick A	Feb. 14
Livingston, A. T	Feb. 14
Olson, Olef	Feb. 14
Parker, N. E	Feb. 14
Pelliconi, Rudolph	Feb. 14
Baird, John W	Feb. 16
Severn, John T	Feb. 16
Dallow, Arthur	Feb. 18
Hollands, William M	Feb. 18
Long, Edgar J	Feb. 19
Alexander, Alice	Feb. 20
Hayden, John F	Feb. 20
McDonnell, Patrick	Feb. 20
Toner, James	Feb. 20
Irvin, Annie S	Feb. 22
McNevin, Joseph	Feb. 23
Buell, William P	Feb. 25
Jansen, Joseph H	Feb. 25
Mayott, Joseph E	Feb. 25
Nichols, Otho W	Feb. 25
Tunnell, John M	Feb. 27
Baumgardner, John H	Mar. 1
Fabian, Lionel J	Mar. 1
Simerson, Chris'r C	Mar. 1
Wolf, Charles A., Jr	Mar. 1
Clinton, George P	Mar. 3
Ferris, George C	Mar. 3
French, Harold F	Mar. 3
Jenkins, Charles	Mar. 3
Jones, Charles O	Mar. 3
Steele, Russell L	Mar. 3
Van Fleet, Clarence E	Mar. 3
Jacobs, J. E	Mar. 5
Jeffries, Clyde L	Mar. 5
Thomas, Mace	Mar. 5
Wilcox, Louis B	Mar. 5
Woods, Lewis F	Mar. 5
Bradley, Carl E., Jr	Mar. 6
Dickson, Joseph	Mar. 8
Geddes, Thomas	Mar. 8
Hugus, Paul G	Mar. 8
Smith, Joseph W	Mar. 8
Smith, Alfred J	Mar. 9
Hinton, Robert C	Mar. 10
Norcross, Daniel B	Mar. 10
Quinn, Edward P	Mar. 10
Stumpf, George W	Mar. 10
Albright, Myron	Mar. 11
Matthews, John P	Mar. 11
Salathy, John	Mar. 11
Smith, Charles F	Mar. 11
Miller, J. Eugene	Mar. 13
Ogorek, John	Mar. 14
Hanson, Berndt L	Mar. 15
Naecker, Sam	Mar. 16
Pike, John W	Mar. 16
Stirewalt, Jacob P	Mar. 16
Bearup, Andrew H	Mar. 17
Lee, Joseph D	Mar. 18
Lundin, Al	Mar. 18
Pratt, Charles M	Mar. 18
Douglass, Terry H	Mar. 19
Drake, Edwin E	Mar. 19
Keeling, Abner M	Mar. 19
Allexan, Joseph	Mar. 20
Tarlton, William H	Mar. 20
Bixel, Christian W	Mar. 21
Ganz, Lewis S	Mar. 21
Johnson, Andrew	Mar. 21
Lewis, Frederick H	Mar. 21
Logan, Chester R	Mar. 21
McBeth, Robert W	Mar. 21
McCray, Coleman L	Mar. 21
McDonald, Joseph A	Mar. 21
Millrick, Harriet S	Mar. 21
Plankenhorn, George N	Mar. 21
Widero, Andrew	Mar. 21
Zentgraf, Edward	Mar. 21
Beverley, Jeanie C	Mar. 22
Yager, Charlie E	Mar. 22
Daly, Jay	Mar. 23
Pfeiffer, Ferdynand	Mar. 23
Golden, John P	Mar. 24
Heald, Frank L	Mar. 24
Bryson, George	Mar. 25
Allgeier, Martin	Mar. 26
Balderacch, Alfred L	Mar. 27
Feurtado, George P	Mar. 27
Hall, Eli R	Mar. 28
Mettke, Emil G	Mar. 28
Peterson, Gust	Mar. 28
Woodward, A. G	Mar. 28
Jackson, John W	Mar. 29
Webber, Michael	Mar. 29
Cage, Elise	April 1
Guarino, Leoluke	April 1
Hall, Dacus	April 1
Hayes, Daniel G	April 1
Martin, Frank R	April 1
Newbold, Albert G	April 1
Osterhout, Paul	April 1
Sanders, John T	April 1
Wilson, Delaplane	April 1
Chase, Herbert D	April 2
Maxwell, Alfred B	April 2
Wadlow, Benjamin F	April 2
Carr, William O	April 3
Frost, Richard	April 3
Jackson, William K., Jr	April 3
MacNeil, Henry T	April 3
Pickard, Rawson J	April 3
Rossiter, Lawrence J	April 3
Anderson, Carl	April 5
Beers, Albert W	April 6
Murray, William	April 6
Ratterree, James N	April 6
Eppley, Roy W	April 7
Byrd, J. B	April 8
Carr, Challiss C	Arpil 8
Fetterman, Daniel A	April 8
Hendricks, Clarence E	April 8
McDonald, Nicholas A	April 8
Miller, Forrest G	April 8
Runyan, Raymond W	April 8
Morris, Thomas J	April 9
Driver, Harry J	April 10
Houchin, John W	April 10
Hays, Richard L	April 11
Eason, John D	April 12
Lenham, Murray N	April 12
Mussina, Lyons	April 13
Beark, William A	April 14
Boyd, Samuel J	April 14
Campbell, George M	April 14
Cobb, Catherine I	April 14
Dain, Harriet J	April 14
Dunne, Joseph H	April 14
Hartman, Harry W	April 14
Hemby, Cleveland	April 14
Johnson, Gust	April 14
Johnson, William E	April 14
Loeck, Ferdinand	April 14
Meeks, Manning	April 14
Mezger, Fred C., Jr	April 14
Newton, Frederic	April 14
Post, Burton H	April 14
Scott, Archibald	April 14
Dauphine, Everett G	April 15
Gibson, Archie M	April 15
Ports, Charles W	April 16
Fraser, Guy O	April 16
McCandlish, Robert H	April 17
Conkerton, John	April 19
Wilkinson, Thomas H	April 19
Larzelere, Charles B	April 20
Lomman, Charles F	April 20
Riddick, William M	April 20
Ross, John	April 20
Warnecke, Edward E	April 20
Fortie, John	April 21
Johnson, Charles A	April 21
Barney, William	April 23
Holt, John M	April 23
Wantland, Charles F	April 23
Ashley, K. M	April 24
Argue, Archie	April 27
Cross, Laura E	April 27
Friedman, Sigmund	April 27
Jones, Andrew N	April 27
Sedleske, Stanley	April 27
Sweek, Francis J	April 27
Turnbull, Joseph	April 27
Walter, Anthony S	April 27
Decker, Edward H	April 28
Harrington, Clifford A	April 28
Lowrie, James R	April 28
McGrath, Martin	April 28
Poltrino, Louis A	April 28
Hanbury, George H	May 1
Langvardt, Neils	May 1
Crawford, Edward M	May 2
Davis, Calvin C	May 2
Hanson, Bernice E	May 2
Sherman, Edward C	May 2
Smith, Homer K	May 2
Weidmann, Nicholas	May 2
Klause, William	May 3
Turner, William M	May 3
Erikson, Erik	May 5
Kemper, William E	May 5
Nink, George W	May 5
Reese, Pee Wee	May 5
Renaud, Ernest L	May 5
Whelan, Ambrose L	May 5
Whelan, Fenton	May 5
Glawson, Robert L	May 6
Marlow, Lorel B	May 6
Snyder, W. T	May 8
Blawat, James	May 9
Kefalas, Alexander I. D	May 9
Kelchner, Frank	May 9
Ludwig, Archie O	May 9
Mason, Charles F	May 9
Paul, Lilian C	May 9
Reekie, Robert	May 9
Snyder, Bernard C	May 10
Buell, Walter	May 11
Peterson, Mauremus	May 11
McEvers, Edward H	May 13
Ward, Leonidas E	May 13
Benny, William E	May 14
Dumville, Benj. B., Jr	May 14
Jenkins, Benjamin	May 14
Langel, Louis	May 14
McLean, Frank	May 14
Ruckert, Harry E	May 14
Sheridan, Frank E	May 14
Steele, Marshall J	May 14
Williams, James R	May 14
Morris, Louis S	May 15
Cody, James	May 17
Clayton, William E	May 18
Henderson, George C	May 18
Salmon, Henry R	May 19
Eiler, Theodore	May 20
Griffin, Arthur T	May 20
Litt, Ben M	May 20
McCloskey, James W	May 20
Roberts, Peter L	May 20
Sherry, Laura E	May 20
Swain, John	May 20
Chaffee, Frank B	May 21
Gildea, John P	May 21
Clutter, Christ'r W., Jr	May 22
Lumby, Thomas L	May 22
Billet, Arthur J	May 26
Cannan, Stephen V	May 26
Demmy, John L	May 26
Green, Frank E	May 26
Harrison, William T., Jr	May 26
McCormick, John J	May 26
Misal, Charles	May 26
Morgan, Charles W	May 26
Murwin, William H	May 26
Ross, Walter G	May 26
Van Maren, Fred	May 26
Whartenby, Albert W	May 26
Bishop, Roy A	May 27
Fryer, Charles F	May 27
Shute, Charles M	May 27
Feige, Charles H	May 28
Fullinwider, Edwin R	May 29
Fellows, Frank E	June 1
Heims, William T	June 1
Hill, Eugene W	June 1
Jackson, William L	June 1
Newhard, Samuel W	June 1
Prados, Arthur L	June 1
Dunn, William H	June 3
Larson, Alex	June 3
Meadway, Joseph	June 4
Parsons, Frank E	June 4
Casanova, Victor	June 5
Vaughan, James H	June 5
Watts, Herbert C	June 5
Barr, Marion	June 8
De Bard, Harriet D	June 8
Huth, Henry F	June 8

SOCIAL LIFE OF THE ZONE.

Church Notes

The quarterly meeting of the Isthmian Sunday School Association will be held in the Commission chapel at Gorgona on Sunday, April 7. Delegates from the several federated Sunday Schools will be present and questions concerning the work on the Isthmus and elsewhere will be discussed. The Isthmian Ministers Association will meet at Cristobal in the Cristobal church as the guest of the pastor, the Rev. Carl H. Elliott on Monday, April 1.

The Rev. W. H. Decker of the Protestant Episcopal Church returned from his annual visit to the Darien mining camp on Sunday, March 10. During his visit he held daily services, including celebrations of the Holy Communion, baptised 20 and married three couples. During the year services are maintained by a regularly appointed catechist.

The Woman's Foreign Missionary Society of the Methodist Episcopal Church, Panama, is in charge of the ceremony of unveiling the memorial windows recently placed in the church parlor, which will be held on April 4, at 3.30 p. m. A program of music and readings with devotional exercises is being arranged. The Ladies' Aid Society and the members of the Spanish section of the missionary society will be among the invited guests. Following the close of the study of the text book on comparative religions, the president of the society will conduct a series of programs dealing with missionary work in South America.

The Ladies' Auxiliary of the Empire Christian League held its regular meeting in the chapel on March 15. The work of the auxiliary thus far this year has been directed toward the decorating of the chapel and the payment of a scholarship in the Methodist College in Panama. The missionary meeting of the organization will be held at the home of Mrs. Philip Kelly on Friday, April 12.

The woman's Altar Guild of Christ Church by-the-sea, Colon, is holding weekly meetings at the homes of members during Lent. The members are rehearsing a play to be given for the benefit of the guild at Colon Hospital on Wednesday night, April 10. Tickets will cost 50 cents and home-made refreshments will be sold.

The last lenten meeting of the woman's Altar Guild of St. Luke's Hospital chapel, Ancon, will be held at the residence of Mrs. S. T. Darling, Ancon Hospital grounds at 3:30 p. m.

Women's Organizations.

The Gatun Woman's Club will hold a charity ball at the clubhouse on Saturday evening, April 13 the receipts to be given to the Federation $300-fund. The details of the entertainment are in the hands of a committee composed of Mrs. V. V. Sessions, chairman, and Mrs. C. H. Stoddard and Mrs. E. L. Waid, members. During the intermission homemade refreshments will be sold.

The Cristobal Woman's Club held a bridge party for the Federation fund in the government building on Cristobal point on Friday afternoon, March 15. The receipts were $40.

Sunday, March 24, was observed as Mission Sunday in the Union Church, Gatun. Special music was sung. The offering was presented to the woman's club for the Federation fund.

The Empire Woman's Club held the fourth in the series of home meetings on Thursday, March 21, at the residence of Mrs. T. J. Hanrahan, Las Cascadas. Since the establishment of the custom of holding meetings at the home of members the attendance has been good and interest in the club has been well sustained.

The Ladies Auxiliary of the Grand International Society of Locomotive Engineers celebrated its third anniversary on Friday afternoon, March 22, the occasion being also a farewell to Mrs. Arthur McGowan, past president, who is leaving the Isthmus for her home in the States. The auxiliary will hold a ball at the lodge hall Paraiso on April 13, for the benefit of the Highland Park Home near Chicago.

High School.

The Canal Zone High School has issued the fourth number of *The Zonian*. The school paper is in its usual form and has sixteen pages. The cover design, by John Loulan, class '15, is a combination of the coat of arms of the Republic of Panama and the shield of the Canal Zone. A new feature is "The San Blas Indian at Home" and the other "How Panama Got its Name."

The High School has an enrollment of 75, an increase of 14 over the enrollment in 1911; fifty-six students are in the Gatun section and fourteen constitute the freshman and sophomore classes at Ancon. The students will hold their annual reception at the Gatun school in April.

Two basket ball teams have been organized in the Ancon section. The field has ben laid out behind the baseball park and the teams are having daily practice.

Colon Humane Society.

The Colon Humane Society held its monthly meeting on Wednesday evening, March 20 in the municipal building, Colon, where a room has been recently assigned to the society for use as office and meeting place. The society's agent reported eleven cases of cruelty to animals for prosecution and relief. An ordinance is to be present to the municipal counsel imposing a tax of $500 on the promotors of bull fights for killing a bull in the ring. A committee of three members was appointed to draft a resolution regulating the hours for coach horses.

Benefit Ball.

A benefit ball will be held in Kangaroo Hall, Empire on the night of April 6 by the International Association of Machinists, No. 684.

Obituary.

Karl Kornfeld, an American employed in the Atlantic Division and residing at Cristobal, died at Colon hospital on March 19 from organic disease of the heart. He was born in Austria, was 42 years of age, and had been on the Isthmus two years. His wife, residing at 98 Hopkins street, Brooklyn, survives him.

Married.

WRIGHT-YARBROUGH—In Ancon on March 9, by the Rev. Henry A. Brown, Grace, daughter of William Leonard Yarbrough, to Daniel Edward Wright. Canal Zone residence, Empire.

PALM-CROSECUP—In Culebra on March 4 by the Rev. Henry A. Brown, Olive, daughter of Mr. and Mrs. Stephen Crosecup, to Frederick Wilhelm Palm. Canal Zone residence, Culebra.

BRONK-McDERMOTT—At Charlestown, Mass., on March 2, 1912, Eugenia McDermott of Charlestown to A. Earl Bronk of Schenectady, N. Y., the Rev. Philo W. Sprague officiating.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

ATHLETIC MEET.

An indoor athletic meet was held at Camp Elliott on Saturday evening, March 16, following a game of indoor baseball between the Gatun and Empire teams, won by the latter. Thirty-eight entries were made; 9 from Empire, 8 from Gorgona, 12 from Camp Elliott, 8 from Gatun, and 1 from Culebra. Events and winners were: *Twenty-yard dash*—1st, Collier of Gorgona, 2nd, Robinson of Gorgona; 3rd, Alley of Empire. *Twelve-pound Shot Put*—1st, MacDonald of Empire; 2nd, Anderson of Camp Elliott; 3rd, Gebhardt of Camp Elliott. *Running High Jump*—1st, Koperski of Empire; 2nd, Knapp of Camp Elliott; 3rd, Collier of Gorgona. *Running Broad Jump*—1st, Robinson of Gorgona; 2nd, Koperski of Empire; 3rd, Robertson of Gorgona. *Single Game of Ten Pins*—1st, Herrington of Culebra; 2nd, Dickson of Gatun; 3rd, Walters of Camp Elliott. *Eight Men Relay Race*—1st, Empire, 2nd, Gatun; 3rd, Gorgona.

GENERAL.

The schedule for moving picture entertainments for the week of April 1 to 6, is as follows: Monday, Cristobal; Tuesday, Gorgona; Wednesday, Corozal; Thursday, Gatun; Friday, Empire; Saturday, Culebra.

Capt. J. W. Crawford, the poet scout, has begun a series of entertainments in the Commission clubhouses. The following schedule is at present being followed, but is subject to change: Corozal, March 27, Culebra, 28th; Gorgona, 29th; Gatun, April 1; Empire, 3rd; Cristobal, 4th; Gorgona, 5th; Porto Bello, 6th; Ancon, 8th; Culebra, 9th; Corozal, 10th; Gatun, 11th; Empire, 12th. Details as to Captain Crawford's plans may be obtained from the office of the Superintendent of Clubhouses.

The standing of the Indoor Baseball League to March 23, follows:

	Won.	Lost.	P. C.
Gorgona	3	0	1.000
Culebra	3	1	.750
Corozal	2	1	.666
Empire	2	2	.500
Cristobal	1	3	.250
Gatun	0	4	.000

COROZAL.

The Debating Society held an open political convention at the Clubhouse last Friday night. Some of the nominating speeches brought forth considerable applause from the audience. The nominees were as follows: Roosevelt by Mr. Pinto; Taft by Mr. Sessums; LaFollette by Mr. Metzer; Harmon by Mr. LeMire: Debbs by Mr. Brown and DeLeon by Mr. Bennick. After the nomination speeches a vote was taken and LaFollette was the favorite candidate. Refreshments were served at the close of the program.

The handicap pool tournament scheduled to close on Saturday night resulted in a tie between Logan, Lofgren and Tribolet. A series of games will be arranged to decide the winner of the tournment.

The Empire Minstrel Troupe will appear at the Corozal Clubhouse on Saturday night, April 13.

CULEBRA.

The following are the scores of the men in the chess tournament:

Name.	Won.	Lost	Draw.
Bartlett	6	5	
Dubois	8	6	1
Goodnew	7	6	
Erickson	4	10	
Janney	7	6	1
Newman	2	11	1
Sterns	9	2	1
Warner	7	11	

The game of indoor baseball, played at Culebra between Culebra and Gatun, was won by Culebra; score 20 to 6. The following was the lineup: *Culebra*—Cushing, Hepler, Adams, Dougherty, Tupper, VanZandt, Hepler, Baumer. *Gatun*—Dalton, Kerrish, Dennis, Cole, Whiston, Atkins, Thompson, Gibson.

The Isthmian duckpin tournament will open on April 13.

EMPIRE

The following high scores were bowled on the alleys during the past week: *Duckpins*—Pinney, 106, 101; Giavolli, 108; Gorham, 116; Danielson, 101. *Candle Pins*—Nelson, 105; Goolsby, 105; Davis, 100. *Ten-Pins*—Snyder, 214.

The Empire Christian League bowled the Culebra League on Saturday, March 23, Empire winning two of three games. The scores were as follows:

Empire.				Culebra.			
Totals...	786	704	728	Totals....	718	716	725

A return game will be played at Culebra.

GORGONA.

Gorgona defeated Empire Saturday night, March 23 in a game of indoor baseball, the score being 22 to 4. Following is the lineup: *Empire*—Greening, King, Miller, Adams, Giavolli, Alley. *Gorgona*—Ridge, Louden, Hilty, Christenson, Emerson, Keuntz, Hennen, Carpenter.

Captain Jack Crawford will appear Friday night, March 29, at 7.30 p. m. Members will be admitted free while the general admission will be 50 cents.

Mr. Wm. Freeland of Empire led the "Sunset Sing" on Sunday night. On next Sunday, beginning at 7 p. m., the stereopticon will be used and illustrated hymns will be sung. Admission is free and all are invited to come and sing.

Mr. Jess T. Hopkins left for the States on Tuesday, March 26, accompanied by his wife and child. He has resigned his position as physical director of the Gorgona clubhouse and will take a similar position in Montevideo South America, with the International Committee of the Y. M. C. A.

GATUN

Instead of seven teams, as previously announced, there are now eight teams in the Gatun Y. M. C. A. local duckpin league. The new team is called the "All Malts" and is composed of Durand, Capt., Chris Severn, Gibson, Case, and H. Myers. The scores of games during the week ending March 23 were as follows: Beavers, 2, Stars 1; Tigers 2, Sure Shots 1; Algonquins 3, Ruf Nex 0; Stars 2, All Malts 1.

The Gatun Y. M. C. A. Choral Club gave a concert at the clubhouse on Friday evening, March 22. There was an audience of 320 people. The hall was decorated with palms, pennants and bunting. Mr. A. B. Dickson, director and accompanist, was assisted by the Tenth Infantry orchestra. The program was as follows:

Part 1.

Aderation (from Holy City), Orchestra; Piano Solo, Mr. Bronson; Soprano Solo, Mrs. Hughes; Tenor Solo, Mr. Ross; Violin Solo, Mrs. Decker (accompanied by Mrs. Dickson); Bass Solo, Mr. Case; Contralto Solo, Madame Faure.

Part 2.

Orotario, "Holy City", A. R. Gaul, by the Choral Club and Orchestra.

The members of the chorus are: *Sopranos*—Mrs. C. R. Hughes, Mrs. C. H. Harris, Mrs. W. T. MacFarlane, Mrs. E. G. Bath, Miss Eva Harris, Miss Mary Clark, Miss Margaret Stephenson, Miss Ruth Clark; *Altos*—Mrs. W. N. Windes, Mrs. Nat Johnson, Mrs. F. W. Cooper, Miss Cora Sessions, Miss Ruth Hanna, Miss Opal Adams; *Tenors*—A. C. Arthur, A. J. Coleman, J. A. Langston, Lyons Mussina, P. R. Shailer, V. V. Veenschoten; *Bassos*—Chas. Ourand, C. C. Carr, Wm. Duey, Henry Rohr, Lee Mitchell, F. M. Noble, F. G. Smith.

The Choral Club will give its next concert at Gorgona on Sunday evening, March 31, and will appear at Cristobal on Saturday evening, April 6.

Corozal will play indoor baseball at Gatun on Saturday, March 30. The public is invited to see the game.

The Hill Magical Company will give an entertainment at Gatun on Monday, April 8.

CRISTOBAL.

The second term of the Spanish class will begin on Monday evening, April 1, under the leaderchip of Senor J. Gomez of Gatun. The term consists of ten weeks and the cost of lessons is two dollars and fifty cents per term. The sessions are to begin at seven o'clock, instead of at eight o'clock, as in previous term A beginners' class will also be started, provided a sufficient enrollment can be secured. The beginners' class will begin at eight o'clock on Monday evenings

On Friday evening a smoker was given to the men of Cristobal, with an attendance of nearly three hundred. The program consisted of musical numbers by the I. C. C. Band; the Musical Trio of Culebra, Messrs. Ramsey, Arbuckle and Howard; a clown stunt by Mr. and Mrs. Oliver, from New York connected with the Hill Magical Company; heavy balancing act by F. W. Tudor of Culebra; and slack wire performance, with other acts by R. E. Chatfield of Gatun. Apples, cigars, peanuts and punch were served during the evening.

On Saturday evening Corozal indoor baseball team defeated the Cristobal team on the local floor by a score of 22 to 16.

On Saturday, March 30, the Empire minstrels will give an entertainment. Admission, members free others fifty cents.

On last saturday night the Cristobal bowlers defeated Empire in two games out of three on the local alleys, with the follwoing scores:

Cristobal.	Empire.
469 431 445	430 432 444

The following high scores were made on the local alleys during the week ending March 23: *Duck* pins—A. Farrell, 101; Orr, 104;, 105; Gilmore, 104; Whittles, 111, 100; Smith, 104, 104; Weston, 102, 102, 101; E. Cotton, 102; Herrington, 101; Barrett, 106; Bullard, 100, 101; Hess, 108; M. Cotton, 100, 103, 101; Herring 103, 100, 118, 110; Marquez, 102; Clausell, 109; Beck, 107; Jacques, 102; D. Carty, 101; Gibson, 107.—*Tenpins*—Buser, 205.

OFFICIAL CIRCULARS.

Invoice of Transferred Material.

CULEBRA, C. Z., March 16, 1912.

TO ALL CONCERNED:

Referring to circular issued by this office, dated May 19, 1911, advising that transfer of second hand rails, ties and fastenings between divisions of the Panama railroad, to be used as track material, be invoiced at 50 per cent of the original cost;

Please be advised that this circular applies to all transfers of material of this class.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Secrecy Regarding Fortifications.

CULEBRA, C. Z., March 19, 1912.

CIRCULAR No. 435:

With a view of preventing, as far as practicable, visitors from obtaining information relative to the military defenses under construction on the Canal Zone, which might be communicated to a foreign power, the following regulations governing visitors to such defense reservations are hereby published, in accordance with Paragraph 358, Army Regulations:

1. Persons who are not employed in connection with fortification work will not be permitted to visit military defense reservations on which active construction operations have begun, except as provided in Paragraphs 2 and 3 hereof.
2. Officers of the U. S. Army, Navy, and Marine Corps, who can conclusively prove their indentity as such, will be permitted to visit such reservations.
3. Other American citizens will be permitted to visit such reservations only when provided with passes, which will, under exceptional circumstances, be issued by the Chairman and Chief Engineer of the Isthmian Canal Commission, or by the Assistant Engineer in charge of the construction of fortifications.
4. Superintendents, Assistant Engineers, Supervisors, Foremen, and all other employes in charge of the several units and batteries under construction, are hereby directed to prevent the visits of all unauthorized persons and to treat such persons as trespassers.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Surcharge on Material and Labor for Churches, etc.

CULEBRA, C. Z., March 19, 1912.

CIRCULAR No. 169-L:

Effective this date, the same surcharge will apply on material and labor furnished churches, lodges, or charitable institutions, as on material and labor furnished the Government of the Canal Zone.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Removal of Persons in Classified Service.

CULEBRA, C. Z., March 19, 1912.

CIRCULAR No. 432-A:

The President's Executive Order of December 9, 1911, which was quoted in part in Circular No. 432, was amended February 8, 1912. The sections quoted now read as follows:

> 2. A person in the competitive service whose removal is proposed shall be furnished with a statement of reasons and be allowed a reasonable time for personally answering such reasons in writing; but no examination of witnesses nor any trial or hearing shall be required except in the discretion of the officer making the removal. Copy of such reasons, and answer, and of the order of removal, shall be made a part of the records of the proper department or office, and the Commission [U. S. Civil Service Commission] shall upon its request be furnished with a copy of the record in the case. The above procedure shall be followed in like manner in any reduction in grade or compensation for delinquency or misconduct, but the procedure may be limited to the filing of a statement of reasons with the order for reduction if the reduction is for administrative reasons only.
>
> 3. Pending action under Section 2 of this rule, or for disciplinary reasons, a person may be suspended or temporarily removed for a period not to exceed ninety days, but the reasons for such suspension or removal shall be furnished the employe and filed in the records of the proper department or office.

H. F. HODGES,
Acting Chairman.

Notice to Persons Not Enumerated in the Census.

CULEBRA, C. Z., March 26, 1912.

CIRCULAR No. 429-A:

All employes of the Isthmian Canal Commission and the Panama Railroad Company who were in the service on February 1, 1912, and who have not been enumerated in the census of the Canal Zone, which is being taken as of that date, are directed to so advise their immediate superiors before April 1, 1912, giving their names, metal check numbers, place of residence and where employed.

Employes having knowledge that any members of their families (residing in the Canal Zone) were not included in the census are directed to notify their superiors, stating the house number and location.

A list of the names of persons, with the information above requested, shall be forwarded by heads of departments to the Head of the Department of Civil Administration.

H. F. HODGES.
Acting Chairman, Isthmian Canal Commission.
Second Vice President, Panama Railroad Company.

Acting Chief Quarantine Officer, and Health Officer, Department of Sanitation.

DEPARTMENT OF SANITATION,
ANCON, C. Z., March 21, 1912.

SPECIAL ORDER:

During the absence of Dr. J. C. Perry, Dr. Fleetwood Gruver will act as Chief Quarantine Officer, signing all correspondence as "For and in the absence of Chief Quarantine Officer."

Dr. John J. McCormick in addition to his other duties, will act as Health Officer, Panama, signing all papers as "For and in the absence of Health Officer."

By direction of Chief Sanitary Officer.

JOHN L. PHILLIPS,
Assistant Chief Sanitary Officer.

GATUN, C. Z., March 25, 1912.

CIRCULAR:

Effective March 28, 1912, and during the leave period of Mr. Ben Jenkins, Chief Clerk, Mr. W. N. Windes, Assistant Chief Clerk, will act as Chief Clerk of the Atlantic Division.

WM. L. SIBERT,
Division Engineer.

PANAMA CANAL BASEBALL LEAGUE.

RESULT OF GAMES, MARCH 24.

At Ancon—Ancon, 2; 10th Infantry, 7.
At Empire—Empire, 1; Com.-Sub., 4.

STANDING OF CLUBS.

	P.	W.	L.	P.C.		P.	W.	L.	P.C.
Com.-Sub.	11	8	3	.727	Empire	11	6	5	.545
Ancon	12	7	5	.583	10th In'ty.	12	3	9	.250

SCHEDULE FOR MARCH 31.

At Ancon—Ancon. vs. 10th Infantry.
At Colon—Com.-Sub. vs. Empire.

GAME AT EMPIRE, MARCH 24.

C.-S.	AB.	H.	PO.	A.	E.	Empire.	AB.	H.	PO.	A.	E.
Buch'an,cf.	4	2	3	0	0	VanZ'dt,lf.	3	0	2	0	0
Curtis,2b.	2	0	1	2	0	Maguire,1b	3	0	11	0	0
Mosher,ss.	4	1	0	1	0	HerringC,c	4	0	13	0	0
Sullivan,lf.	4	1	1	0	0	Murphy,cf.	4	1	0	0	0
Weiss,1b.	4	0	7	0	0	Markley,2b	3	0	0	1	1
Herring,3b.	4	1	0	0	1	Toone,3b.	4	1	1	2	0
Beard,rf.	4	0	4	0	0	Bryan,ss.	3	0	0	5	0
Sterner,c.	3	0	11	1	0	Ridge,rf.	2	0	0	0	1
Davis,p.	2	0	0	3	1	Marshall,p.	3	1	0	4	0
Totals	31	5	27	7	2	Totals	29	3	27	12	2

Com.-Sub	0	0	1	0	0	0	0	0	3	—4
Empire	0	0	0	0	0	0	0	1	0	—1

Runs—C.-S.: Buchanan, Mosher, Weiss, Davis. Empire: Marshall. Earned runs—Com.-Sub. 3, Empire 1. Two-base hits—Buchanan, Sullivan, Herring. Home runs—Mosher, Marshall. Sacrifice hits—Curtis 2. Stolen bases—Sullivan, Weiss, C. Herring. First base on errors—Com.-Sub. 2, Empire 1. Base on balls—off Davis 3, off Marshall 1. Struck out—by Davis 11, by Marshall 11. Hit by pitcher—by Davis 1 (Markley). Left on bases—C.-S. 3, Empire 5. Umpire—Scull. Time of game—1.50. Scorer—Garrett.

GAME AT ANCON, MARCH 24.

Infantry.	AB.	H.	PO.	A.	E.	Ancon.	AB.	H.	PO.	A.	E.
Dele'ty,rf.	4	1	0	0	0	Lindberg,rf	5	2	0	0	0
Cassidy,ss.	4	1	3	1	1	Edwards,1b	5	1	8	1	1
Smith,cf.	4	2	2	0	0	Snyder,2b.	5	1	1	2	0
Trickey,c.	4	2	10	1	1	Drennan,cf	4	3	0	0	0
Laugner,1b	4	1	10	0	2	Pear'an,3b.	3	1	1	1	0
Skeris,3b.	4	0	0	4	0	Potter,ss.	4	1	3	3	0
Lucas,lf.	4	0	0	0	0	Russell,lf.	4	1	0	1	1
Salusky,2b.	4	1	1	4	0	Hodnett,c.	4	0	14	2	0
VanOtt'n,p	4	0	1	2	0	Murray,p.	4	1	0	2	1
Totals	36	8	27	12	4	Totals	38	11	27	12	3

Tenth Infantry	5	1	0	0	0	0	0	0	1	—7
Ancon	1	0	1	0	0	0	0	0	0	—2

Runs—Infantry: Delehanty, Cassidy 2, Smith, Trickey, Laugner, Lucas. Ancon: Lindberg, Edwards Earned runs—Infantry 4. Two-base hits—Delehanty, Smith, Laugner, Saluski, Trickey, Pearman, Murray Lindberg, Drennan. Stolen bases—Lindberg 2, Frennan. First base on errors—Infantry 3, Ancon 2. Bases on balls—off Van Ottmen 1, Murray 2. Struck out—by Van Ottman 6, by Murray 13. Left on bases—Infantry 4, Ancon 10. Double plays—Van Ottman to Laugner. Umpire—Foster. Time of game 2 hours. Scorer—Hoffman.

LOST—Near Y. M. C. A., Cristobal, one gold chain and Catholic emblem. Return to R. T. Stewart House No. 30, Cristobal.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning March 26, 1912.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	16
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	*20
Tenderloin (Western), per pound	24
Venison (Imported), Stew, per pound	.12
Forequarter (not under 6½ pounds), per pound	.16
Rack (not under 5½ pounds), per pound	.27
Saddle (not under 7½ lbs.), per pound	.27
Leg (not under 9 pounds), per pound	.27
Chops, per pound	.28
Cutlets	.28
MISCELLANEOUS.	
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Beef, per pound	25
Eggs, fresh, dozen	*28
one-half dozen only	*15
Bluefish, per lb	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	14
Fluke, fresh, per pound	10
Oysters, 1 quart, per box	40
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each	60, 70, 80, 90, 1.00
Ducks, Western, about 4½ pounds, each	1.25
Hens, milk fed, for roasting, about 3 pounds, each	50
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	23
Squabs, each	35
Capons, each	2.10
Grouse, each	50
Ducks, teal, per pair	50
Ducks, Blackhead, pair	60
Partridges	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30
CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
DAIRY PRODUCTS.	
Butter—Creamery special, per pound	35
Sheffield Farms, extra fancy, per lb	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	22
Swiss, per pound	28
Edam, each	1.00
Cheese—Parmesan, pound	§35
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**20
Fer-mil-lac, bottle	**20
Ice cream, quart	‡25
½-gallon	‡50
VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	10
Cabbage, per pound	4
Cucumbers, per pound	†20
Carrots, per pound	4
Lettuce, per pound	8
Onions, per pound	5
Parsley, per pound	10
Potatoes, white, per pound	3
sweet, per pound	2
Parsnips, per pound	4
Turnips, per pound	3
Tomatoes, per pound	10
Yams, per pound	3
Apples, per pound	6
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery.

§Sold only from cold storage and not from commissaries.

Rainfall from March 1 to 23, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	.01	2	.01
Balboa	.00	....	.00
*Miraflores	.00	....	.00
Pedro Miguel	.02	2	.02
Rio Grande	.02	2	.03
Ccentral Section—			
Culebra	.02	2	.02
*Camacho	.04	2	.04
Empire	.01	2	.01
Gamboa	.10	2	.10
*Juan Mina	.05	2	.07
Alhajuela	.02	2	.02
*El Vigia	.06	2	.08
*Gorgona	.02	2	.02
*Frijoles	.06	3	.10
*Monte Lirio	.09	2	.19
Atlantic Section—			
Gatun	.18	11	.49
*Brazos Brook	.08	11	.50
Colon	.33	11	.65
Porto Bello	.07	21	†.35

*Standard rain gauge—readings at 5 p. m., daily. Automatic rain gauge at unstarred stations—values midnight to midnight. †To 5.00 p. m., March 22.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, March 23, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Mar. 17	124.8	91.2	43.9	17.3	17.2
Mon., Mar. 18	124.8	91.2	43.9	17.3	17.3
Tue., Mar. 19	124.8	91.2	43.8	17.4	17.3
Wed., Mar. 20	124.8	91.2	43.8	17.5	17.3
Thurs., Mar. 21	124.8	91.2	43.9	17.5	17.4
Fri., Mar. 22	125.0	91.3	44.0	17.6	17.4
Sat., Mar. 23	125.0	91.4	44.0	17.6	17.5
Height of low water to the nearest foot	125.0	91.0	44.0		

LOST—On Central Avenue in Panama or on train No. 71, on March 16, a filled gold hunting case watch with I. C. C. brass check No. 136,454 and 1915 World's Fair badge attached. Reward for return to J. G. Warner, Gorgona.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.				
Advance	P. R. R.	Tuesday	Mar.	19
Panama	P. R. R.	Tuesday	Mar.	26
Allianca	P. R. R.	Monday	April	1
Colon	P. R. R.	Monday	April	8
Advance	P. R. R.	Saturday	April	13
Panama	P. R. R.	Saturday	April	20
Allianca	P. R. R.	Friday	April	26
CRISTOBAL TO NEW YORK.				
Advance	P. R. R.	Monday	April	1
Panama	P. R. R.	Sunday	April	7
Allianca	P. R. R.	Sunday	April	14
Colon	P. R. R.	Saturday	April	20
Advance	P. R. R.	Friday	April	26
Panama	P. R. R.	Friday	May	3
Allianca	P. R. R.	Thursday	May	9
NEW YORK TO COLON.				
Santa Marta	U. F. C.	Wednesday	Mar.	20
Prinz August Wilhelm	H.-A.	Saturday	Mar.	23
Turrialba	U. F. C.	Saturday	Mar.	23
Metapan	U. F. C.	Wednesday	Mar.	27
Prinz Eitel Friedrich	H.-A.	Saturday	Mar.	30
Thames	R. M.	Saturday	Mar.	30
Tivives	U. F. C.	Saturday	Mar.	30
Zacapa	U. F. C.	Wednesday	April	3
Prinz Joachim	H.-A.	Saturday	April	6
Sixaola	U. F. C.	Saturday	April	6
Almirante	U. F. C.	Wednesday	April	10
Prinz Sigismund	H.-A.	Saturday	April	13
Trent	R. M.	Saturday	April	13
Carrillo	U. F. C.	Saturday	April	13
Santa Marta	U. F. C.	Wednesday	April	17
Turrialba	U. F. C.	Saturday	April	20
Prinz August Wilhelm	H.-A.	Saturday	April	20
Metapan	U. F. C.	Wednesday	April	24
Arcadian	R. M.	Saturday	April	27
Prinz Eitel Friedrich	H.-A.	Saturday	April	27
Tivives	U. F. C.	Saturday	April	27
Zacapa	U. F. C.	Wednesday	May	1
COLON TO NEW YORK.				
Almirante	U. F. C.	Thursday	Mar.	28
Prinz Sigismund	H.-A.	Monday	April	1
Carrillo	U. F. C.	Tuesday	April	2
Trent	R. M.	Tuesday	April	2
Blucher	H.-A.	Wednesday	April	3
Santa Marta	U. F. C.	Thursday	April	4
Turrialba	U. F. C.	Tuesday	April	9
Prinz August Wilhelm	H.-A.	Tuesday	April	9
Metapan	U. F. C.	Thursday	April	11
Prinz Eitel Friedrich	H.-A.	Monday	April	15
Oruba	R. M.	Tuesday	April	16
Tivives	U. F. C.	Tuesday	April	16
Zacapa	U. F. C.	Thursday	April	18
Prinz Joachim	H.-A.	Tuesday	April	23
Sixaola	U. F. C.	Tuesday	April	23
Almirante	U. F. C.	Thursday	April	25
Prinz Sigismund	H.-A.	Monday	April	29
Tagus	R. M.	Tuesday	April	30
Carrillo	U. F. C.	Tuesday	April	30
NEW ORLEANS TO COLON.				
Abangarez	U. F. C.	Saturday	Mar.	23
Heredia	U. F. C.	Wednesday	Mar.	27
Atenas	U. F. C.	Saturday	Mar.	30
Orleanian	U. F. C.	Wednesday	April	3
Parismina	U. F. C.	Saturday	April	6
Cartago	U. F. C.	Wednesday	April	10
Abangarez	U. F. C.	Saturday	April	13
Heredia	U. F. C.	Wednesday	April	17
Atenas	U. F. C.	Saturday	April	20
Orleanian	U. F. C.	Wednesday	April	24
COLON TO NEW ORLEANS				
Parismina	U. F. C.	Thursday	Mar.	28
Cartago	U. F. C.	Thursday	Mar.	28
Abangarez	U. F. C.	Thursday	April	4
Heredia	U. F. C.	Thursday	April	4
Atenas	U. F. C.	Thursday	April	11
Orleanian	U. F. C.	Thursday	April	11
Parismina	U. F. C.	Thursday	April	18
Cartago	U. F. C.	Thursday	April	18
Abangarez	U. F. C.	Thursday	April	25
Heredia	U. F. C.	Thursday	April	25

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 5 p. m.; ships for New York via Kingston on Tuesdays at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, APRIL 3, 1912. No. 32.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Award for 246 Motors.

The Washington office of the Commission has been directed to enter into a contract with the General Electric Company for 246 motors —220-volt, 25 cycle, 3, phase, alternating current. Of this number 116 are to be of 50 horsepower for the rising stem gate valve machines and 130 of $7\frac{1}{2}$ horsepower for the cylindrical valve, and auxiliary culvert valve machines. The cost will be approximately $120,000. The award is made to the lowest satisfactory bidder.

Toes of Gatun Dam Together.

The inner sides of the north and south toes of the east wing of Gatun Dam have been brought together for a distance of about a hundred yards from the spillway toward the locks, and this portion of Gatun Dam is practically completed. Over the hydraulic fill, the top of which was at elevation 93 above sealevel and about 200 feet wide at the spillway end, clay has been dumped and puddled between the rock toes until the top of the dam is practically level for a width of a hundred feet at present elevation of 103.35 feet. Settling will decrease this slightly but it is probable that a coating of rock will be laid to make the final top 105 feet above sealevel.

Filling in that portion of the east wing in which the toes have not come together, over a distance of about 600 yards, is continued by means of clay from the borrow pit at the west end of the dam. On the west wing, hydraulic filling is still under way and has reached an elevation of about 83 feet.

Gold Hill Section of Relocated Line.

Work by steamshovels on the Gold Hill section of the relocated line of the Panama railroad, between Gamboa and Pedro Miguel, has been completed and the shovels which were engaged there during the last months have been transferred to Canal construction. This means that all grading for the relocated line has practically been completed, as the portions between Pedro Miguel and Panama and Gamboa and Colon are in use. The remainder of the work will consist principally of track laying and ballasting and the construction of telegraph, telephone and signal systems. The entire section is now under track, but about 6 miles are laid with 70-pound rail, which is being replaced by 90-pound rail. It will be ready for freight traffic about June 1, but passenger trains will continue to run over the present route until the Canal is practically completed, as all of the larger inland Canal Zone villages are situated on the present main route, across the Canal channel from the relocated line, which lies east of the Canal for its entire length.

For the greater part of the distance between Gamboa and Pedro Miguel the relocated line runs within $\frac{1}{2}$ mile of the Canal channel, but in passing around Gold Hill it swings about 2 miles east of the Canal. Crossing the continental divide, the track follows the valley of the Pedro Miguel River to Pedro Miguel station, where it is within 300 feet of the locks. The highest elevation reached by the track is 270 feet above mean sealevel, at a point opposite Las Cascadas. The Continental Divide is crossed at elevation 240 above mean sealevel, at a point about opposite Culebra. The maximum grade in the Gold Hill section, which is $9\frac{3}{4}$ miles long, is $1\frac{1}{4}$ per cent, between Gamboa and La Pita Divide, and the maximum curvature is on a radius of 819 feet.

New Track from Miraflores to Pedro Miguel.

Under the present arrangement the tracks of the Pacific Division between Miraflores and Pedro Miguel Locks lie to the east of the Canal channel, and spur tracks lead to the west side of the locks. At Miraflores the several spur tracks cross the sites of the upper approach wall and the northwest wing wall, and the main line crosses the site of the northeast wing wall, to which the concrete spillway will be joined. At Pedro Miguel the tracks run across the site of the lower approach wall. To allow the removal as necessary of these tracks and the continuation of work on the walls, a track connecting the two locks is being built along the west side of the Canal channel. At the southern, or Miraflores end, it will be connected with tracks which extend from the lower end of Miraflores Dam. A link is being built from the lower end of the dam skirting Cocoli Hill, to the track at the hydraulic station, which is joined to the sand track, east of the Canal, by a line running over the dike which separates the waters of the Pacific from the channel adjacent to the lower end of Miraflores Locks. A track over the same route, from the hydraulic station to Miraflores Dam, was formerly in use but its temporary removal was necessitated by the work of the monitors, which cut away the earth far up on the side of the hill.

The present main line tracks will be broken where they cross the site of the northeast wing wall at Miraflores Locks but otherwise they will be left intact for construction purposes. To facilitate transfers from them to the new through line west of the channel a spur track is being built just beyond the proposed end of the upper approach wall at Miraflores, crossing the lower end of the proposed lake at an angle and on a fill about six feet above the ground. The Rio Grande is crossed on a 125-foot trestle, supported on pile bents driven at intervals of 15 feet.

Selected Rock in Storage at Gatun.

The selected rock stored in a dump north of the New Gatun station, to be used in the Gatun Dam, is being excavated with a steamshovel. The rock came from the northern end of Culebra Cut and is known as Bas Obispo rock, on account of the proximity to the principal strata of the village of that name. The first of it was stored at New Gatun in June, 1909, and approximately a train a day, each containing about 450 cubic yards, was dumped there until the middle of February of the next year. Allowing for shrinkage, the pile contained at the time excavation for distribution was begun about 160 000 cubic yards. The most of the rock being taken out at present goes on the lake side of the Gatun Dam, above elevation 75 feet above sea level, though some is used for ballasting track at Mindi and for filling and revetment about the locks.

Bas Obispo rock, chosen because of its hardness and indifference to water and atmosphere, is a dark gray basaltic trap. of volcanic origin. The strata are of great thickness opposite Bas Obispo, where, with the exception of the portion through the continental divide at Gold Hill, the Cut is deepest; and the rock is of such strength and closegrained texture that the sides of the channel, over a considerable extent, are practically vertical and as even as the sides of a marble quarry. At the time the storage pile at Gatun was begun it was thought these strata contained all of this kind of rock that might be obtained from the Canal excavation but deeper excavation revealed later a considerable amount of the same kind in the channel near Empire. This was used mostly in the construction of the toes for Gatun and Pedro Miguel Dams.

Rio Grande-Panama Water Supply.

With the exception of a short section south of the Curundu River near Bridge 65 of the Panama railroad, the laying of which was delayed by a temporary shortage of pipe, the new 20-inch water main from the Rio Grande reservoir to Panama has been completed. The completed portion is undergoing pressure tests to try the joints and reveal cracks in the pipes but it will not be put into regular use until after the beginning of the wet season. However, about two thousand feet of the new main, including the 24-inch cast iron pipe.

NOTES OF PROGRESS.

(Continued.)

crossing the forebay of Pedro Miguel Lock within the concrete sills for the emergency dams and extending to the line of the Panama railroad at Pedro Miguel station, has been connected in, to allow the removal of the corresponding portion of the old 16-inch main.

The line from the Rio Grande reservoir to the filteration plant at Ancon is approximately 50,800 feet in length. The wet season level of the water in the reservoir (top of dam) is 238 feet above sealevel and with this head the new main will give a pressure in Panama of from 45 to 50 pounds to the square inch as an average, though it will fluctuate considerably in accord with the demands of the Canal construction work to which the main is tributary. The present level in the Rio Grande reservoir, near the end of the dry season, is about 218 feet above sealevel.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 85 per cent completed, 193,641 cubic yards, out of a total of 225,000, having been placed at the close of work on March 30. A statement of the amount laid each working day last week, and of the total in p'ace, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
March 25	260	9.30	2
March 26	300	9.30	2
March 27	236	8.00	1
March 28	236	8.00	2
March 29	232	8.00	1
March 30	260	10.00	2
Total	1,524	53.00	
Previously reported	192,117		
Grand total	193,641		

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending March 30, follows:

DATE.	Hours worked.	Cubic Yards.
March 25	13.35	4,943
March 26	2.55	1,676
March 27	4.00	1,393
March 28	12.00	4,880
March 29	10.55	4,349
March 30	13.45	4,986
Total	57.10	22,232

Porto Bello Crusher.

DATE.	Hours worked.	Cubic Yards.
March 25	3.40	1,706
March 26	4.30	1,512
March 27	4.00	1,950
March 28	3.30	1,702
March 29	3.45	1,920
March 30	4.00	1,945
Total	23.25	10,735

Construction of Baffle Piers at Gatun Spillway.

The closing of the dam of the spillway at Gatun, allowing no water to flow through the discharge channel, affords easy access to the sites of the baffle piers which are to be constructed at the foot of the ogee curve, and work was begun last week on cleaning out the pits in which reinforced concrete piers will be based. The floor of the discharge channel was completed on June 30, 1909, with spaces left for the construction of the piers. At these places pits were sunk to bedrock, which is at about 2 feet below sealevel, or 12 feet below the surface of the floor, and the baffle piers will be built up from rock to 8 feet above the floor. The piers will be in a double line, the lower row being 12 feet from the upper and with its piers opposite the intervals of the upper row. The row nearest the ogee is to occupy an arc of 150 degrees in a circle of a radius of 200 feet, with spaces of 12 feet between piers. In cross section the piers will be irregular hexagons, with the greatest faces upstream, and with greatest diameters of about 15 feet. There will be 12 piers in the upper row and 11 in the lower.

The upstream faces of these piers will be sheathed in heavy iron castings, to protect the concrete against the impact of heavy drift.

CONCRETE WORK IN THE LOCKS.

Over 82 per cent of the concrete for the locks is in place, the amount at the close of work on March 30 being 3,476,276 cubic yards, out of a total of approximately 4,199,400. A total of 27,395 cubic yards of concrete was laid in the locks during the week ending March 30.

GATUN LOCKS.

Over 92 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on March 30 being 1,854,665 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending March 30, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 25	940	15.32	4					940
March 26	578	12.48	4					578
March 27	834	13.52	4					834
March 28	756	12.58	4					756
March 29	1,046	17.40	4					1,046
March 30	464	11.46	4					464
*Portable mixers				358				358
Total	4,618			358				4,976
Previously reported								1,849,689
Grand total								1,854,665

*The 358 yards shown for the portable mixers are reinforced concrete, and were placed on the following days: March 25th, 63½; March 26th, 52; March 27th, 38; March 28th, 63½; March 29th, 82; March 30th, 59.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 98 per cent completed, 828,094 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on March 30. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 25	166	5.00	1	190	20.50	4		356
March 26	254	7.50	1	100	10.00	2		354
March 27	300	7.00	1	143	13.00	2		443
March 28	176	4.00	1	141	14.50	3		317
March 29	160	4.00	1	123	12.00	3		283
March 30	182	4.50	1	82	8.00	2		264
Total	1,238	32.00	1	779	78.00	2.67		2,017
Previously reported							4,423	826,077
Grand total							4,423	828,094

MIRAFLORES LOCKS.

Over 58 per cent of the concrete for the system of two twin locks at Miraflores was in place on March 30, the total amount on that date being 793,517 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
March 25	2,270	54.33	8	794	12.00	2	560	38.75	8		3,624
March 26	2,222	54.33	8	884	14.00	2	578	50.55	9		3,684
March 27	1,560	34.83	8	876	14.00	2	659	45.42	9		3,095
March 28	2,064	52.67	8	932	13.00	2	595	40.17	8		3,591
March 29	1,062	47.00	8	618	9.50	2	566	36.00	8		2,246
March 30	2,506	62.36	8	1,018	15.17	2	638	43.67	9		4,162
Total	11,684	305.52	8	5,122	77.67	2	3,596	254.56	8 5		20,402
Previously reported										3,693	773,115
Grand total										3,693	793,517

SURVEY AT PACIFIC ENTRANCE.

Triangulation, Topography, Soundings, Wire Drag, and Magnetic Work.

The survey of the approaches to the Pacific entrance of the Canal by the Coast and Geodetic Survey is almost completed. The survey steamer *Patterson*, Capt. H W. Rhodes, which arrived at Panama from Alaska on January 15, will finish its work next week, and the wire drag party under Assistant N. H. Heck will be through with its part by the end of April.

The survey has developed the southern approach to the canal between 8 degrees 32 minutes and 9 degrees north latitude, a distance of 28 miles, and 79.25 and 79.45 west longitude, a distance of about 20 miles. Triangulation, topography of the shore line and islands, and deep water soundings have been carried on, and work in terrestrial magnetism has been done at Naos, Changarmi, and Taboga Islands and Chame Point. This part of the survey has been in charge of the officers and crew of the *Patterson*. The triangulation has been greatly hampered during the past six weeks by smoke from forest fires, and dry season clearings. The submerged rock off Tortola Island has also been located.

The work of the wire drag party has been to explore the harbor to a depth of 40 feet in the immediate vicinity of the entrance, in an area of about 150 square miles. This work has been done by six officers, and their employes, from three launches and a tender. The survey is directed principally towards discovering submerged obstructions, such as pinnacle rocks, which may have escaped the ordinary surveys by sounding; that is there are found in navigable waters rocks that stick up from the bottom in the shape of a pinnacle. A lead striking such a rock may come to rest, and in that event the location is determined. More frequently, however, it slides off the pinnacle and the depth registered is that at which it finally comes to rest, which may be many feet below the top of the rock. A chart with such a reference is a danger rather than an aid. The wire drag discovers all such obstructions. It consists of a long cable held above the water by buoys at regular intervals, from which hangs, at a predetermined depth, a parallel wire cable. In the south appraoch to the Canal this lower cable was fixed at 42 feet below the surface, and the longest drag used was a mile in length. The drag is towed slowly through the water by launches on which observers keep a lookout. When an obstruction is struck, the buoys in the vicinity tip over, the drag is stopped, and men in a boat then determine the exact locality of the obstruction. This work goes slowly, but it is thorough. The wire drag survey will have occupied about six months when it is concluded.

The results of the entire survey will be communicated to the Commission, and published in the Coast and Geodetic Survey chart of the Pacific approach to the Canal.

Coal Deposits on The Canal Zone.

By direction of the Assistant to the Chief Engineer the Commission Geologist has examined the so-called "coal deposits" on the Canal Zone and has made the following report:

"*Tabernilla Coal Deposit*—The present trail from the old Tabernilla pumping station to this ground is very dim, and the old shafts and holes are somewhat obscured by a growth of brush and vegetation, the lowest ones being partly filled with water from the backing up of the Frijoles River. At present the surface conditions reveal very little except to show the general geological relations and to supplement, to some extent, the study which was made of the cores obtained from this ground. The following are the general geological conditions that obtain at this so-called "coal deposit:"

"(*a*) An older series of basalt and gabbro flows and breccias. No coal could by any possible means occur in these rocks.

"(*b*) A younger series of bedded volcanic conglomerates tuffs and clays.

"(*c*) Between (a) and (b) and in the lower part of (b), local prehistoric swamps gave some carbonaceous material to certain local lenses of clay and shale. These carbonaceous clays and shales constitute the so-called "coal beds."

"There is really no coal here at all. The carbonaceous clay and shale beds which do occur are too low grade to be properly classed even as lignite. In only three holes, which are close together, (2, 8, and 9) were the carbonaceous shales and clays found. Regarding the other holes they were drilled from a few feet to 100 feet into volcanic rocks which could not by any chance contain coal.

Other deposits—It is certain that no coal of any commercial importance will ever be found within the Canal Zone, for the following reasons:

"(*a*) The rocks of the Zone are, to a considerable extent, igneous and marine. Igneous rocks never contain coal. Marine deposits seldom do, except as local lenses resulting from prehistoric flat-shore conditions or marine swamps.

"(*b*) The land-formed deposits of rock on the Zone are not of the kind in which coal ordinarily occurs.

"(*c*) The Canal Zone rocks are mostly all Tertiary in age, and, with a few exceptions, coal is not found in rocks as young as these. The local lignite shale beds of Culebra Cut, and at other points, have no commercial value whatever, because of their very high percentage of ash and high content of water.

"(*e*) All of the formations on the Canal Zone are known to contain lignitic shales and carbonaceous clays so friable and brittle that, even if they contained coal beds of value, such beds could not be mined except along surface outcrops, because the overlying or roof rocks could not be held up unless timbering of prohibitive cost were restored to."

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on April 10. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m., on April 10, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

PERSONAL.

Col. Geo. W. Goethals is a passenger on the *Allianca* which left New York for the Isthmus on April 1.

OFFICIAL CIRCULARS.

Invoice of Transferred Material. (Corrected).

CULEBRA, C. Z., March 16, 1912.

TO ALL CONCERNED:

Referring to circular issued by this office dated May 19, 1911, advising that transfer of second hand rails, ties and fastenings between Divisions and the Panama railroad, to be used as track material, be invoiced at 50 per cent of the original cost:

Please be advised that this circular applies to all transfers of material of this class.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Observance of Good Friday.

CULEBRA, C. Z., March 22, 1912.

So far as consistent with the transaction of public business, Friday, April 5 (Good Friday), will be observed as a holiday in the Canal Zone.

Good Friday is not included in the list of holidays for which gratuity pay is allowed, and pay for services performed on that day will be calculated the same as for Sundays.

Holy Thursday will be considered an ordinary working day and payment made accordingly.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Time Vouchers for Silver Employes.

CULEBRA, C. Z., March 30, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

Complaint has been made that silver employes who resign on short notice and return to the West Indies are frequently unable to draw their pay before sailing. This is due to the fact that time voucher must be made out, forwarded to the Examiner of Accounts, checked, and forwarded through the Disbursing Officer to the paymaster at Cristobal. It does not seem practicable to change this system of handling time vouchers, but, in order to minimize the inconvenience complained of, it is directed that a notice be posted at each time office advising silver employes who may intend leaving the Isthmus to notify their time keepers two or three days in advance, in order that a time voucher may be prepared and reach the paymaster through the usual channels prior to the employe s departure.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Employes' Transportation Coupons to be Filled Out.

CULEBRA, C. Z., March 29, 1912.

Attention has been called to the fact that employes holding I. C. C. 24-trip tickets, and 120-trip tickets, are not complying with previous instructions that coupons be filled out and signed before entering train Employes must fill out and sign coupons before presentation at passenger gates at Colon and Panama, and before entering train at intermediate stations. The rule requiring the employe to sign coupons in the presence of collector was discontinued some months ago.

By direction of the Acting Chairman.

Respectfully,
C. A. MCILVAINE, *Chief Clerk.*

Steamship "Panama" Accommodations.

CULEBRA, C. Z., April 1, 1912.

TO ALL CONCERNED:

All available cabin accommodations having been reserved on the steamship *Panama*, scheduled to sail from Cristobal on Sunday, April 7, no further requests for this sailing should be submitted.

By direction of the Acting Chairman.

Respectfully,
C. A. MCILVAINE *Chief Clerk.*

United Fruit Company Stateroom Reservations.

CULEBRA, C. Z., April 1, 1912.

TO ALL CONCERNED:

In view of the large increase in passenger traffic on the steamers of the United Fruit Company to New Orleans and New York, the Company has decided to waive the rule limiting the reservation of staterooms to one week in advance of the schedule sailing, and hereafter, in order to secure accommodations, employes will be permitted to arrange reservations thirty days in advance of sailing date.

By direction of the Acting Chairman.

Respectfully,
C. A. MCILVAINE, *Chief Clerk.*

CANAL MEDAL LIST.

(Continued)

Below are published the names of American employees of the Isthmian Canal Commission, who have completed two years of continuous service on the Isthmus during the twelve months ending December 31, 1911 and are in consequence entitled to receive a Canal Medal. The date shown opposite each name is that from which medal service is completed.

The list is now published in order that it may be carefully checked by those interested. Any omissions, errors in spelling of names, or in the dates from which service is reckoned, should be promptly reported to the Office of the Chairman, at Culebra, for correction.

The Medal list covering employees of the Panama Railroad will appear in a later issue, as well as the bar lists for both I. C. C. and P. R. R. employees.

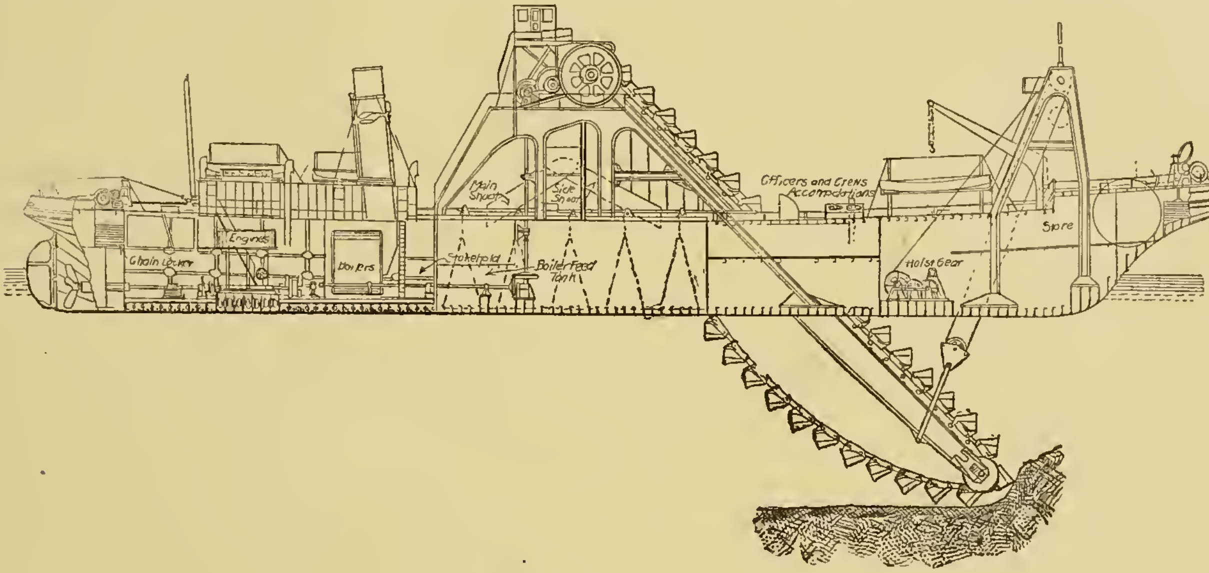
The Heads of divisions are requested carefully to check their lists of American employees on the silver roll, and to report any omissions on the medal or bar lists to the above office.

Name.	*Date.*
1909.	
Newman, Charles	June 8
Reeves, John M	June 8
Schellhaus, William G.	June 8
Scull, Lewis M	June 8
Watson, Fred C	June 8
Zeller, Alfred D	June 8
Seaborn, Robert G	June 9
Blackburn, William H.	June 10
Brown, George W	June 14
Drennan, Lawrence M.	June 14
Liemandt, Max	June 14
Newton, Charles T	June 14
Sundberg, Peter J	June 14
Wahlund, Charles	June 14
Weitzel, Henry E	June 14
Lawrence, Thomas M.	June 15
Lewis, Lewis H	June 15
Morris, Alfred F	June 15
Schlunkes, Jacob	June 15
Jackson, Howard H	June 16
Russell, William	June 16
Jones, Will A	June 17
Bodley, Evert H	June 18
Hilman, John	June 18
Hirsh, Francis H	June 18
Lewis, Paul F	June 18
McCabe, Frank J	June 18
Miller, Charles I	June 18
Reeve, Archie L	June 18
Seibold, George	June 18
Tregoning, John W	June 18
Jolly, Earl C	June 21
Bissett, Thomas	June 23
Meisner, Frank H	June 23
Conneely, John E	June 24
Eriksen, Carl E	June 24
Fryer, Luther T	June 24
Gilman, Edgar D	June 24
Goau, Henry O	June 24
Hunsecker, Frank S	June 24
Johnson, John C	June 24
Lauritzen, William C.	June 24
Murray, William E	June 24
Smith, Walter D	June 24
Swift, Richard	June 24
Williams, Lewis E	June 24
Conway, Edward Z	June 26
McDowell, Clarence P.	June 26
Kunce, Ammon L	June 28
Sessions, Warren W	June 28
Gutheil, Louis	June 30
Marshall, Olive E	June 30
Whiston, George	June 30
Boster, Joseph E	July 1
Boyd, Archibald P	July 1
Boyd, John R	July 1
Mull, Leonard M	July 1
Noland, C. P	July 1
Payne, James T	July 1
Eppley, Russell S	July 2
Hall, Peter A	July 2
Pack, Frank L	July 2
Mitchell, William S	July 3
Thompson, Joseph B	July 3
Barbas, Michael S	July 6
Gray, William A	July 6
Engelke, Harry N	July 7
Hess, James A	July 7
Baird, Peter A	July 8
De Poorter, Louis	July 8
Johnson, Robert B	July 8
Brown, John H	July 9
Bryson, Edward	July 9
Donnelly, John W	July 9
Gambrill, William S	July 9
Hart, Marion	July 9
Holloway, Don B	July 9
McCauley, Waldo J	July 9
James, Samuel H	July 10
Pintt, John B	July 10
Arnold, John H	July 12
Gibson, Katherine M	July 12
Huber, J. Fred	July 12
Swinter, Virginia S	July 12
Anderson, George A. T	July 13
Blackburn, Raymond L.	July 13
Bratt, Edgar O	July 13
Cadwallader, Harry, Jr.	July 13
Catlin, William R	July 13
Cousins, John W	July 13
Cramer, Charles W	July 13
Kramer, George R.D. Jr.	July 13
Nicholson, Edward P	July 13
Nygren, Victor W	July 13
O'Malley, James	July 13
Shehy, Josephine M	July 13
Cronk, Henry E	July 14
Price, Thomas J	July 15
Hannafin, M. J	July 17
O'Shea, Patrick	July 17
Burns, Thomas F. A	July 18
Makatura, John	July 18
Quinn, Peter	July 18
Ruggles, Martin V	July 18
Zilenski, William F	July 18
Jones, William L	July 19
Langley, Emory L	July 19
Playford, James R	July 19
Woodman, Edward N.	July 19
Browning, Gordon E	July 20
Dierkes, John E	July 20
Ellington, C. B	July 20
Fritot, Charles J	July 21
Frederick, Oscar F	July 22
Greenwood, Hugh A	July 22
Hall, Wells H	July 22
Napier, Amalie M	July 22
Nygren, Walfred	July 22
Surgant, Arthur F	July 24
Eggleston, Helen G	July 25
Huber, Charles	July 25
McMurdo, Hew B	July 25
Spencer, Alphonsus L	July 25
Conkling, Wirt D	July 26
Unger, Charles E	July 27
Robertson, Elpha	July 28
Gardner, Herbert F	July 29
Gray, George E	July 29
Jelinek, Wenceslas	July 29
Nick, Edwin W	July 29
Pierce, Walter B	July 29
Shope, Kirby W	July 29
Toombs, William	July 29
Van Sittert, Edward H.	July 29
Walsh, Martin F	July 29
Garrett, William M	July 30
Armstrong, Lucie R	July 31
Bailey, Helen L	July 31
Bodley, Harvey W	July 31
Bowie, William R	July 31
Cotter, Catherine	July 31
Fonda, Gorge H	July 31
Meredith, Amy Pauline.	July 31
Miller, Boyce	July 31
Millett, Ray E	July 31
Pettys, William N	July 31
Riley, Olive	July 31
Russell, John D	July 31
Smith, James F	July 31
Tinsley, Robert B	July 31
Westervelt, Harry	July 31
Browne, Claude	Aug. 2
Baxter, Andrew	Aug. 3
Bell, Frank M	Aug. 3
Snyder, Harry	Aug. 3
Eason, James T., Jr	Aug. 4
Fladstol, O'Lena	Aug. 4
Beall, Marvin E	Aug. 5
Cogan, Richard F. J	Aug. 5
Everett, John F	Aug. 5
Harrington, Nelle L	Aug. 5
Holland, Jeremiah S	Aug. 5
McNeil, Mary J	Aug. 5
Myers, Ola	Aug. 5
Woodring, Harvey	Aug. 7
Knowles, Thomas W	Aug. 9
Christ, Mary F	Aug. 11
Eder, Louis M	Aug. 11
Leighton, Walter E	Aug. 11
Morris, Ralph R	Aug. 11
Norman, Victor A. E	Aug. 11
O'Day, Sylvester F	Aug. 11
Taylor, John T	Aug. 11
Baker, George D	Aug. 12
Exline, Jesse A	Aug. 12
Hughes, George L	Aug. 12
Mapes, L. E	Aug. 13
McDonald, Robert M.	Aug. 13
Stringfellow, Walter R.	Aug. 16
Barnebey, Walter	Aug. 17
Faulkner, Helen B	Aug. 17
McDonald, Matthew	Aug. 17
Shropshire, James B	Aug. 17
Growman, Harry	Aug. 18
Croake, John J	Aug. 19
McLean, Alexander J.	Aug. 19
Barry, Michael J	Aug. 20
Gundelfingen, Alex. R.	Aug. 20
Smith, Claude B	Aug. 20
Kingman, Newell P	Aug. 21
Flynn, John J	Aug. 22
Fahr, Augustus W	Aug. 23
King, Ralph	Aug. 23
Taylor, George	Aug. 23
Tricker, William L	Aug. 23
Fahey, Michael J	Aug. 24
Hayes, Joseph	Aug. 24
Stone, William H	Aug. 24
Wilson, James	Aug. 24
Winchester, John J	Aug. 24
Conklin, Charles T	Aug. 26
McEwen, John	Aug. 26
Stone, J. C	Aug. 26
Udry, Joseph W	Aug. 26
Womeldurf, James F	Aug. 27
Gause, Frank A	Aug. 29
Gramlich, John P	Aug 29
Illwitzer, Paul G	Aug. 29
Landon, Rufus W	Aug. 29
Noon, Robert G	Aug. 29
Tudor, Walter P	Aug. 29
Woolnough, Arthur	Aug. 29
Freeland, John R	Aug. 30
Herrington, Forrest E.	Aug. 30
Brazile, J. A	Sept. 2
Cage, Duncan S	Sept. 2
Case, E. Paul	Sept. 2
Dogan, Lewis H	Sept. 2
Goree, Frederick E	Sept. 2
Rosenthal, Ignatius	Sept. 2
Symms, Arthur F	Sept. 2
Weber, Charles B	Sept. 2
Bennick, Frederick G.	Sept. 3
Coppin, Charles C	Sept. 3
Ford, Stanley R	Sept. 3
Groebler, Fred A	Sept. 3
Huff, William	Sept. 3
Judd, Frank H., Jr	Sept. 3
Peak, Albert F	Sept. 3
Petersen, Niels C	Sept. 3
Poole, John H	Sept. 3
Rogers, George L	Sept. 3
Scott, Tassie M	Sept. 3
Stagg, Z. T., Jr	Sept. 3
Wago, Martin	Sept. 3
Webb, Arthur D	Sept. 3
Weidner, Fraley N	Sept. 3
Nolan, Edward T	Sept. 4
Appleton, Robert	Sept. 7
Brown, Harry L	Sept. 7
Elliott, William S	Sept. 7
Lund, Arthur H	Sept. 8
Purcell, Fred	Sept. 8
Sackett, Charles	Sept. 8
Storey, Clarence W	Sept. 8
Wilke, George C	Sept. 8
Barry, Arthur	Sept. 9
Calligan, William R	Sept. 9
Carpenter, Jerome E	Sept. 9
Corkran, James G	Sept. 9
Cutler, Harrison B	Sept. 9
Forsstrom, Albin B	Sept. 9
Hasse, Frank H	Sept. 9
Hoover, Marion P	Sept. 9
Lewis, Edward L	Sept. 9
McCullough, George C.	Sept. 9
Motz, Leon	Sept. 9
Peay, William S	Sept. 9
Porter, Harry W	Sept. 9
Putcheck, Gustave U.	Sept. 9
Seymour, Robert F	Sept. 9
Van Voy, Thomas B	Sept. 9
Veenschoten, Vincent V	Sept. 9
Zimmer, Jacob	Sept. 9
Summers, Alvin	Sept. 10
Washabaugh, Frank	Sept. 11
Wolf, Frank H	Sept. 11
Emmons, Nye E	Sept. 13
Hart, Stephen K	Sept. 14
Bowes, Oscar T	Sept. 15
Mockler, Richard	Sept. 15
Cressey, Fred	Sept. 17
Fraser, Charles F	Sept. 17
Hale, Edwin H	Sept. 17
Kelly, Lawrence W	Sept. 17
Rintz, Philip	Sept. 17
Smith, Frank G	Sept. 17
Toland, Alice	Sept. 17
Austin, Daniel A	Sept. 18
Carmack, Prescott H.	Sept. 18
Raper, William	Sept. 20
White, Frank A	Sept. 20
Steele, Frank	Sept. 21
Baetz, Walter G. F	Sept. 22
Bordt, Charles B	Sept. 22
Calvit, Charles G	Sept. 22
Chapman, John L	Sept. 22
Fisher, David F	Sept. 22
Lofgren, Willard E	Sept. 22
Morris, Thomas C	Sept. 22
Ramsbottom, Eugene C	Sept. 22
Reynolds, Roland M	Sept. 22
Reynolds, William C	Sept. 22
Taber, Lewis A	Sept. 22
Wagg, Frank P	Sept. 22
Wheeler, Claud D	Sept. 23
Cameron, Frank F	Sept. 24
Fisher, Egnetz	Sept. 25
Naylor, Thomas E	Sept. 25
Gunn, George J	Sept. 27
Huber, Charles C	Sept. 27
McDaniel, Archie R	Sept. 27
Godfrey, Mary J	Sept. 30
Kelly, Martin J	Sept. 30
Anderson, M. Edith	Oct. 1
Brumby, R. H	Oct. 1
Carr, Charles C	Oct. 1
Munroe, Georgia T	Oct. 1
Stone, Annie E	Oct. 1
Johnson, Leslie E	Oct. 2
Anderson, Atwood W	Oct. 4
Chatfield, Russell E	Oct. 4
Hagenmacher, Albert	Oct. 4
Hill, Robert B	Oct. 4
Kelly, William A	Oct. 4
Locks, Charles F	Oct. 4
Mack, Luzerne W	Oct. 4
Monroe, Frazer F	Oct. 4
Rohr, Henry	Oct. 4
Sawtelle, Percival A	Oct. 4
Stearns, Stanley W	Oct. 4
Varenkamp, Maximilian C	Oct. 4
Besnard, John L	Oct. 5
Harrold, Emmet M	Oct. 5
Hickey, John M	Oct. 5
Stahlmann, Henry G	Oct. 5
Hanigan, Edward W	Oct. 6
Dalton, Norman V	Oct. 7
Test, Harry J	Oct. 7
Novey, George F	Oct. 9
Wilcox, George R	Oct. 9
Brown, Frank	Oct. 10
Eggleston, William T	Oct. 11
Palm, John D	Oct. 12
Thomas, Benjamin S	Oct. 12
Bentley, Hugh S	Oct. 13
Christensen, John B	Oct. 13
Clapp, Warner H	Oct. 13
Denst, Leonard R	Oct. 13
Ewing, Roy V	Oct. 13
Graham, James	Oct. 13
Haggerty, Stephen A	Oct. 13
Jones, Millard W	Oct. 13
Kersey, Harry A	Oct. 13
Klunk, Charles E	Oct. 13
Lawton, Clarence W	Oct. 13
McAnelly, Homer H	Oct. 13
Nixon, Thomas A	Oct. 13
Pennington, James H	Oct. 13
Stepp, Norman/E	Oct. 13
Stickney, Charles M	Oct. 13
Weigold, Louis F	Oct. 13
Whittles, William A	Oct. 13
Zellfelder, Marie	Oct. 13
Bellinger, Eugene M	Oct. 14
Boogs, Reinhard A	Oct. 14
Cate, George	Oct. 14
Elliott, David H	Oct. 14
Falk, Kristian	Oct. 14
Hite, Henry B	Oct. 14
Jamieson, David H	Oct. 14
Jarratt, Thomas	Oct. 14
Kenney, William A	Oct. 14
Olsen, George C	Oct. 14

THE DREDGE COROZAL.

Voyage of the Sea-Going Ladder Dredge from Scotland.

The dredge *Corozal*, which arrived at Balboa on March 27, made its trip from the Clyde in 117 days without serious mishap. Its log shows a total of 12,064 miles, and actual sailing time of 96 days, an average of 125 miles a day. On leaving the Clyde on December 1, the ship struck heavy weather at once, and all through St. George's Channel and in the English Channel was buffetted about by heavy gales and seas. To see it alongside the wharf at Balboa one would think the dredge, with its ladder frame standing high above the deck, would be very top heavy and dangerous to handle in heavy seas. This proved not to be the case, and it rode so evenly that at no time were the dishes displaced on the officers' mess table.



SEA-GOING, TWIN SCREW, LADDER DREDGE COROZAL.

The heavy seas made it advisable to put into Falmouth on December 8, where the harbor was crowded with steamers that had taken refuge from the storm. The delay was improved by coaling, and by slight repairs to the frames in the forecastle, and the journey was resumed on December 29. From this point stops amounting to 15 days were made, one day at Funchal, one at St. Vincent, one at Bahia, two at Montevideo, four at Punta Arenas, two at Coronel, and four at Callao. The best run was 198 miles in 24 hours made on two successive days between Callao and Panama. Through the Strait of Magellan it was necessary to anchor at night, and the best run was 94 miles in 24 hours.

At Callao the ship's outside was painted, and the dredge looked on arrival at Balboa as though it had never been a day at sea. Except for the storm encountered during the first week, the voyage was without incident, all the machinery working satisfactorily, and no accidents occurring. The master, Capt. Wm. Rodick, who brought the *Corozal* to the Isthmus, has been in the service of the builders for thirty-seven years, and so far as he knows this is the longest voyage ever taken by a dredge with all her superstructure in place ready for digging.

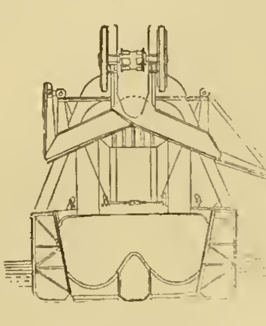
The *Corozal* is a twin-screw hopper dredge built of steel, 268 feet 9 inches overall length, 259 feet between perpendiculars, load water line length, 239 feet; molded breadth, 45 feet; depth, 19 feet; draft when light, 12 feet forward, 14 feet 4 inches aft, 13 feet 2 inches mean; draft when loaded with 1,200 tons of spoil, 14 feet 3 inches forward, 17 feet 4 inches, aft, 15 feet 9½ inches mean.

The boiler plant consists of two Scotch Marine boilers 14½ feet in diameter and 10½ feet long, heating surface 2,022 square feet each, grate area 66 square feet each. There are two main engines, which propel the ship or run the dredging gear. They are of the marine, triple expansion type, with cylinders 17, 27, and 43 inches in diameter, stroke 27 inches. With steam supplied at a pressure of 180 pounds per square inch, they develop 928 and 965 horsepower, a total of 1,893 horsepower. The air pumps, steam 10 inch diameter, air 18-inch, stroke, 10-inch; circulating pumps, 7-inch bore centrifugal; feed pump, steam 9½-inch, 7-inch, 18-inch stroke; are supplied from the main boilers but are not connected with the main engines. There are two condensers with a cooling surface of 1,564 square feet each. The propellors are of cast iron, 9 feet 3 inches in diameter, pitch 12 feet, The dredge is fitted with its own refrigerating and electric lighting plants.

The ladder upon which the continuous chain of buckets revolves is built up of structural steel girders, is 115 feet long and weighs 100 tons. With buckets upon it the total weight is 240 tons. The bull wheels, by means of which the turning power is applied to the chain, weigh 25 tons each, the top tumbler, 15 tons, the bottom 13 tons. Two sizes of buckets are provided, one of 54 cubic feet for excavation in soft material, and each of these weighs 2 tons 8 hundredweight, and a small 35 cubic feet strong bucket for digging in hard material, each weighing 2 tons 14 hundredweight the weights given are for buckets alone, when combined with links and pinions each weighs 4 tons. They are constructed of cast steel backs, pressed plates of mild steel for bodies, and tempered lips of manganese steel. There are 39 in a chain, and ten spares of each kind were brought over by the *Corozal.*

The work for which the dredge is to be used is the digging of about four million cubic yards of hard material, rock, clay, and boulders, from the Pacific entrance of the Canal between Balboa and Miraflores Locks, excavation that cannot be done by the ladder or dipper dredges now in the service, because of the character of the material and the depth at which it is found. The ladder dredges now in use are old French equipment, and the dipper dredge at the Pacific entrance, although a modern American dredge, cannot do the work required. The *Corozal* has a center well ladder so that it can make its own flotation, that is it can dig into a bank ahead, and when the ladder makes an angle of 45 degrees with the vertical, excavation can be carried on at a depth of 50 feet. At this depth the dredge is required to dig 1,200 cubic yards of soft material in an hour, and on the test referred to below a better showing than this was made. With her hopper containing 1,200 tons of spoil and her bunkers loaded with 100 tons of coal the ship must be able to make ten knots an hour, and this test also was successfully met.

The new dredge is equipped to deposit its dredgings in a hopper capable of holding 27,500 cubic feet, with a hydraulic dumping apparatus, or into barges tied alongside, the section amidships printed herewith showing the chutes by which the discharge overboard is made. The method of discharging into barges will be especially useful in excavation in Culebra Cut or at any other interior point where the distance from a suitable dumping ground is so great as to make trips by the dredge itself uneconomical.



SECTION AMIDSHIPS.

The only sea-going ladder dredge now in

the service is the *Gopher*, at the Pacific entrance. Compared with this the *Corozal* has buckets of about five times the capacity of those on the *Gopher*, is able to excavate three times as much in an hour, and to dump from its own bins, whereas the *Gopher* discharges only into barges. Including the *Gopher* there are now four rebuilt French ladder dredges in operation in the Pacific entrance, and the new dredge will have a capacity equal to that of all of them.

It was built by William Simons & Company, Ltd., of Renfrew Scotland. The contract was let on August 13, 1910, after the President had found the bid of an American firm excessive and therefore, was authorized to enter into a contract with a foreign builder. In response to the invitation for bids three had been received; that of the Union Iron Works of San Francisco was $874,146, delivery to be made in fourteen and one-half months; that of Lobnitz & Compant, Ltd. of Renfrew, Scotland was $449,000, delivery to be made in 365 days, and that of William Simons & Company, Ltd. also of Renfrew, was $399,340, delivery to be made in 365 days. The difference between the bid of the Union Iron Works and that of the lowest Renfrew firm was $474,806, an amount considerably greater than the whole bid of William Simons & Company, Ltd. In view of this fact the Chairman and Chief Engineer recommended that the contract be awarded to the lowest bidder, and the President acted upon this advice.

An inspector of the United States Government was present at the works during the entire construction period. Labor troubles caused a delay of several months, and the dredge was launched at the works of the builder on September 13, 1911. After completing successfully a series of tests at digging in hard and soft materials it set out upon its journey to Balboa on December 1, but was compelled to return to Falmouth on account of bad weather, which stove in five frames at the forecastle above the water line. After repairs had been made a second start was made on December 29.

The contract with the builder stipulates that he will deliver the dredge at Balboa after satisfactory tests, and will guarantee the maintenance for a period of six months after delivery, that is a survey made after six months will determine whether any parts have suffered undue wear, and such parts, if there are any, will be replaced without cost to the United States Government.

The test included digging in mud, digging in boulder clay, speed, and endurance, and the tabulated results as published in an article by Mr. W. G. Comber, the Resident Engineer at Balboa, in *The Engineering News* for January 25, show that the requirements were met.

Working in mud the dredge excavated 1,114 tons of material in 41 minutes at depths ranging from 40 to 50 feet, a rate of 1,482 cubic yards an hour; the average of three loads in this test was 1,320 cubic yards an hour at depths of from 33 feet 6 inches to 50 feet 3 inches. In the speed trials with 1,168 tons of spoil, 130 tons of coal, and all stores etc., on board, the average for three runs was 9.678 nautical miles an hour. The tests in boulder clay were made in Belfast harbor, three loads being taken. The weight of the material averaged 128, 127.8, and 133.3 pounds per cubic foot and the average excavation for the three loads was 515 cubic yards per hour by actual measurement, or, determined by the displacement of the dredge, 523 cubic yards. In the last load an actual dredging depth of 53 feet 2 inches below the surface was reached. The tests in boulder clay are typical of the work the *Corozal* must do at the Pacific entrance, and of them the article referred to above says:

> The formation of the bottom at the dredging site varied greatly Hard stiff red clay was encountered at depths under 38 feet, which averaged 126 pounds per cubic foot. Boulder clay was encountered at depths from 38 to 43 feet in which were gravel and stones varying in size from that of a walnut to a stone of a foot or more in diameter. The weight of the boulder clay averaged about 135 pounds per cubic foot. At depths from 43 to 48 feet a conglomerate mass of gravel and small stones mixed with boulder clay such as found above was encountered. Below a depth of 48 feet a hard compact red sand was encountered, in which were stones and gravel, weighing about 141 pounds per cubic foot, and it was very difficult material for the dredge to handle.
>
> While dredging in the boulder clay before reaching sandy material the buckets were well filled, and the dredge appeared to handle the material very well. During the last load the engine stalled repeatedly without showing any undue strain on the dredging machinery. All the dredging gears and bearings worked well with the exception of the forward bearing of the port driving gear shaft in the engine room, which heated slightly, requiring water service on it to be kept in use.

At present the *Corozal* is discharging its cargo of spare parts, coal, chain, etc., additional port holes are being cut so that bunks may be added to the present accomodations, and it is expected that dredging may be begun within two weeks.

New Home of The University Club.

The University Club of the Isthmus of Panama, seventy-five per cent of whose members are employes of the Isthmian Canal Commission and Panama Railroad Company, moved into its new clubhouse near Las Bovedas, the sea wall, in Panama on March 30. A housewarming in the form of a reception with dancing will take place on the night of Saturday, April 20.

The new clubhouse is in a modified Spanish style and fits in nicely with the old buildings about the sea wall, and the old fortress itself. It is of rubble masonry, two stories high, and 105 by 50 feet, with entrances on First and Second streets, and a view of the arm of the bay that lies between the peninsula on which the old city is built and Ancon Hill. On the ground floor are an office, game rooms, grill, kitchen, and men's dining room. On the second floor are the library and reading room, and dining room for women. The entrance to the second floor is by means of a stairway that runs up from the lobby, making it unnecessary to enter the lower floor, which is reserved for men, in order to reach the second floor. The second story has a floor of maple carefully polished, and on occasions when dances are held the library will be cleared, giving a polished floor of 2,800 square feet unobstructed by pillars.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Paraiso, C. Z., Sunday, April 7, 1912 at 2.00 p. m. The program follows:

1. March—*His Excellency*................Fillmore
2. Selection—*The Girl in the Train*.............Fall
3. Waltz—*The Druid's Prayer*............Davson
4. Overture—*Guy Mannering*..............Bishop
5. Mazurka—*La Czarine*...................Ganne
6. A Melody—*Wild Rosebud*..............Tobani
7. —*Pilgrims Chorus from Tannhauser*......Wagner
8. Medley Selection—*Popular Songs*..........Halle
9. March—*Under the Double Eagle*..........Wagner

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Hotel Tivoli, Ancon April 14, 1912 at 8 p. m.

SOCIAL LIFE OF THE ZONE.

Activities of Various Organizations.

The Cristobal Woman's Club has the following program scheduled for the month of April: Wednesday, April 3, general meeting paper on "The Poetry of Philanthropy," the Rev. Carl H. Elliott; April 10, under the home department, subject, "Modern Domestic Science; April 17, art and literature department, subject, "Folk Lore of Different Nations;" April 24, at 3 p. m., Annual meeting, with election of officers.

The pupils of the Gorgona public school entertained their friends with a musical at the Commission clubhouse on Friday evening, March 22. One hundred and forty-five children took part in the exercises. The children sang songs and played games; there were a trio in Spanish and a German solo; "The Wreck of the Hesperus" and "The Children's Hour" were recited by pupils of the third grade, who also gave an exhibition of reading short musical selections at sight. A piano solo and a cornet duet preceded the closing of the exercises with the singing of "The Salute to the Flag" and "The Star Spangled Banner" by the school.

The senior section of the Boys' Anti-Cigarette League, Gorgona, held a farewell reception in honor of Albert LaRock who is leaving for his home in the States, at the home of their directress on Monday evening, March 18. He was a charter member of the League and has been for three years recording secretary. The league has forwarded a box of books to the leper colony at Palo Seco and a box of magazines to Ancon Hospital. New books have been added to the library.

Plans are being made for the organization of the Girl Pioneers of America in Gorgona. The character of this organization is similar to that of the Boy Scouts. Girls between the ages of 12 and 16 will be eligible for membership and it is expected that the organization will begin with about 20 members. Mrs. J. L. Hackenberg and Mrs. George Puer are at the head of the movement.

Church Notes.

The Young People's Christian Endeavor Society of the Cristobal Union Church, held its first entertainment in the church on Friday evening, March 27. The program consisted of a series of living pictures depicting Bible scenes and characters, and musical numbers by Mrs. and Mr. Bennyhof, and Mr. and Mrs. George Butters. Mrs. Butters, Mrs. Harrison and Mrs. Putnam had charge of the entertainment. Since the opening of the new building in February the attendance both at the church services and the Sunday school has increased.

The Isthmian Sunday School Association will hold its next quarterly meeting in the Commission chapel at Gorgona on April 14 instead of on April 7 as previously announced.

Obituary.

John Hagan, an employe of the Panama Railroad Company, died at Colon Hospital on March 29. He was 45 years of age, and had been on the Isthmus seven years, coming here from the State of Iowa. He is survived by his wife who is living at Cristobal.

LOST—In Culebra or on train No. 5, March 30, small silver watch with monogram "Y. M. F." Return to Ad Faure, Chairman's Office, Culebra, and received reward.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The standing of the Indoor Baseball teams on March 31, 1912, was as follows:

Team.	Won.	Lost.	P. C.
Gorgona	4	0	1.000
Culebra	4	1	.800
Corozal	2	2	.500
Empire	2	3	.400
Cristobal	1	4	.200
Gatun	1	4	.200

The schedule of moving picture entertainments for the week April 8 to 13, is as follows: Monday, Corozal; Tuesday, Gatun; Wednesday, Gorgona; Thursday, Cristobal; Friday, Culebra; Saturday, Empire.

CULEBRA.

A Spanish class for women has been organized, and will meet on Wednesdays and Fridays. Any women who desire to take Spanish on Saturday evening from 8 to 9 o'clock should hand their names to the secretary.

A gymnasium class will be organized to meet from 5.15 to 6 o'clock on Mondays and Wednesdays, or such other times as may be desired by the class.

The following is the standing in the Chess Tournament:

Name.	Won.	Lost.	Draw
Bartlett	6	5	
Dubois	8	6	1
Goodnow	7	6	1
Erickson	4	10	
Janney	7	6	1
Newman	2	11	1
Sterns	9	3	1
Warner	8	4	

Capt. Jack Crawford will appear at Culebra on Tuesday, April 9. Seats will be reserved.

The Hill Magical Company will appear at Culebra on April 19.

EMPIRE.

The duck and candle pin tournament that has been running for the last two months closed on Saturday, March 30, with the following results: *Doubles, Duck and candle pins*—Won by Rodeghiero and Pinney, six games each, total pin fall, 1,144; 2nd, Rodeighiro and Gorham, 1,139; *High average*—Rodeighiro 93.36 average for 144 games; *Second high average*—Pinney 90.37 average for 144 games; *Single high score*—Goolsby 127.

The smoker held on Thursday, March 28 was attended by 350 men, the following program was given: Solo, Mr. Walsh; Monologue, Mr. Evans; Dancing, Mr. Stapleton; Dark Town Social Swells, Messrs. Emery and Cogan; Wrestling, Greening and Andrews, Tug of War, Disbursing Office *vs.* Examiner's Office, won by Disbursing Office; Tug of War, Gorgona *vs.* Empire Shops, won by Gorgona: Hill Magical Company.

The Culebra indoor baseball team played at Empire on Saturday, March 30, winning by the score of 13 to 7. Empire will play at Cirstobal on Saturday, April 6.

Messrs. DuBois, Stearns, and Janney of Culebra played several games of chess at Empire on Saturday evening, March 30. The games were about evenly divided.

GORGONA.

A farewell gymnasium class was held on Monday night, March 25, in honor of Jess T. Hopkins, whose resignation becomes effective at the expiration of his leave. Refreshments, speeches, and songs made the evening's entertainment. Mr. Hopkins will spend his vacation in Wichita, Kansas, and San Pedro, California, and about the middle of May will sail for Montevideo where he will have charge of the physical work in connection with the Y. M. C. A. and the city of Montevideo.

The Gatun Choral Club sang Gaul's "Holy City" on Sunday evening, March 31, with A. B. Dickson as director. The soloists were Mrs. Hughes, Mrs. Decker, and Mrs. Dickson, and Messrs. Case and Ross.

The fourth game in the series of the Indoor Baseball League was won by Gorgona from Cristobal on Saturday night, March 30, score 36 to 24. The following was the line-up: *Cristobal*—Russell, Blenker, Merrill, Simons, Duff, Mathews, France, Schwallenberg. *Gorgona*—Ridge, Louden, Hilty, Christensen, Kuentz, Emerson, Carpenter. Next Saturday night the team goes to Gatun.

Two hundred and eighty-seven people attended the moving picture show on March 26.

GATUN.

Bowling has become the most popular game in the Gatun clubhouse. The Local Duckpin League now consists of forty men. Wilson of the Algonquins has high score with 126, during the playing of which he made three consecutive strikes.

The standing of the three high teams is: Algonquins, 1,000; Beavers, .555; Stars, .555. On Friday evening, March 30, there were fifty five spectators present when two match games were played. A negro band furnished music.

"Open house" was observed at the clubhouse on Saturday evening, March 31. Teams from other clubhouses competed with Gatun teams in various events. Refreshments were served. The results of the games showed a clean sweep for Gatun as follows: *Baseball*—Gatun 12, Corozal 7. *Pool*— Gorgona—Ashman 53, Orr 95, Tanghor 86, Miller 27. Gatun—Hughes 100, Dalton 100, Galloway 100, DePoorter 100.

Bowling.

Culebra	430	402	459	Camp Elliott	411	412	418
Gatun (1st)	467	421	467	Gatun (2nd)	449	435	424

Checkers.

	Won.	Lost.	Draw.
Gatun (4 men)	33	20	7
Camp Elliott (4 men)	20	33	7
Gorgona (2 men)			

The Gatun Young Men's Christian Association Choral Club gave a sacred concert at Gorgona on Sunday evening, March 31.

W. C. Gayer led the Discussion Club on Sunday evening, March 31. The subject was "Big Brother Movement."

The Choral Club will sing at Cristobal on Saturday evening, April 6.

The Hill Magical Company will appear at Gatun on Monday evening, April 8.

Dr. Orenstein will give a talk on "Flies" on Tuesday evening, April 16.

CRISTOBAL.

On Saturday, April 6, the Gatun Choral Club will present a program appropriate to Easter. Admission free and by ticket. Reserved seats can be secured after Wednesday noon, April 3. The public is cordially invited.

The standing in the local duckpin tournament is as follows:

Team	Won.	Lost.	P.C.
Phillies	21	6	.777
Pirates	22	8	.733
Reds	20	10	.667
Giants	15	15	.500
Dodgers	12	15	.444
Cardinals	10	20	.333
Cubs	9	21	.308
Doves	8	22	.267

Four hundred and fifty-seven people attended the performance of the Empire Minstrels on Saturday evening, March 30.

Tuesday, April 4, Capt. J. W. Crawford will appear at the Cristobal clubhouse. Members free, others 50 cents.

PORTO BELLO CHESS CLUB.

Name.	Played.	Won.	Lost.	Draw.	P. C.
Tuttle	10	9	1		.900
Hanbury	8	7	1		.875
Morgan, C. D.	10	6	3	1	.650
Goodfellow	8	5	3		.625
Poole	12	6	4	2	.583
Morgan, C. W.	8	4	3	1	.563
McDevitt	8	4	4		.500
Colberg, C. G.	9	4	5		.444
Mackintosh	12	4	6	2	.417
Schreiber	12	5	7		.417
Rosen	12	4	8		.333
Snider	10	2	8		.200
Colberg, A. W.	11	1	10		.091

The Executive Committee has arranged for a handicap tournament to cover a period of six weeks commencing Thursday, April 4 to Wednesday, May 16. The handicaps will be determined on the result of the February and March tournament. First, second and third prizes will be awarded. Eighty per cent of the games must be played tobe eligible for prizes.

Captain H. W. Stickle of Wilmington, Del., formerly of Porto Bello is playing a game of Chess with the Porto Bello Chess Club by correspondence.

Misdirected Letters.

ANCON, C. Z., April 3, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Aitken, D. R.
Albrecht, Miss Pearl
Alcioe, Mrs. Wilfred S.
Allen, Harry
Beddall, C. N. (2)
Beddall, Mrs. Charles N.
Benninger, S. A.
Blake, Addison B.
Blunt, Wm. T.
Bowman, Max
Carter, Maud and L. D.
Claybourn, Noel C.
Colberg, Mrs. Ellen
Cook, Otis P.
DeHart, B.
Day, James M.
Dittrich, R.
Eden, L. L.
Grey, Milton
Griffin, Wick
Good, Miss Emily
Halman, I.
Hanson, Ben
Harper, Robert
Hines, Joseph
Howard, John W.
Howe, Mrs. Wm.
Kennedy, Eugene
Klager, Matthew
Losey, T. J.
Lummis, W. S.
Markham, Carl W.
McCarthy, Mrs. Jerome
Moritz, O. L.
Morse, William
O'Hear, James (2)
Pacheco, Francisco (2)
Padking, W.
Pairolas, Manuel
Perry, Miss Mamie
Staton, Walter C. (2)
Strange, F. L.
Somerville, E. S.
Southwell, Miss Mary A.
Wallace, Jas. T.
Wood, George C.
Zion, Samuel

PANAMA CANAL BASEBALL LEAGUE.

RESULT OF GAMES, MARCH 31.

At Ancon—Ancon, 8; 10th Infantry, 0.
At Colon—Empire, 7; Com.-Sub., 5.

STANDING OF CLUBS.

	P.	W.	L.	P.C.		P.	W.	L.	P.C.
Com.-Sub.	12	8	4	.666	Empire	12	7	5	.583
Ancon	13	8	5	.615	10th In'ty.	13	3	9	.230

SCHEDULE FOR APRIL 7.

At Empire—Ancon. vs. Empire.
At Colon—Com.-Sub. vs. 10th Infantry.

GAME AT COLON, MARCH 31.

Empire.	AB.	H.	PO.	A.	E.	C.-S.	AB.	H.	PO.	A.	E.
VanZa't,lf.	4	2	3	1	0	Buch'an,cf.	5	1	2	0	0
Maguire,1b	4	2	9	0	1	Herring,3b.	5	3	1	1	0
Murphy,cf.	4	2	2	0	0	Curtis,2b.	4	1	3	3	0
Herring,c.	5	2	5	2	0	Mosher,ss.	3	0	2	1	2
Bryan,ss.	5	1	3	2	1	Sullivan,lf.	4	3	0	0	1
Toone,3b	4	0	2	6	0	Weiss,1b.	3	1	8	1	2
Garrett,rf.	5	1	1	1	0	Beard,rf.	4	1	1	1	1
Ridge,2b.	4	0	2	2	1	Sterner,c.	3	2	10	0	1
Snapp,p.	3	0	0	1	0	Davis,p.	4	1	0	5	0
Totals	38	10	27	15	3	Totals	35	13	27	12	7

Empire	0	0	0	1	0	0	4	2	0	7
Com.-Sub	0	3	0	0	0	1	1	0	0	5

Runs—Empire: Van Zandt 2, Magure 2, Murphy, Herring, C., Bryan: Com.-Sub.: Herring, G., Sullivan 2, Weiss, Beard. Earned runs—Empire 2, Com.-Subs. 1. Two-base hits—Magure, C. Herring, Bryan, Buchanan, G. Herring, Curtis, Sullivan 2, Weiss. Three-base hits—Van Zandt. Sacrifice hits—Maguire, Toone, Curtis, Weiss. Stolen bases—W. Sullivan, Weiss, Beard. First base on errors—Empire 5, Com.-Sub. 1. Base on balls—off Davis 3, off Snapp 2. Struck out—by Daivs 8, by Snapp 4. Hit by pitcher—by Davis 2 (Van Zandt, Snapp). Left on bases—Empire 11, Com.-Sub. 7. Double plays—Curtis to Weiss, Van Zandt to Bryan, Toone to Ridge to Maguire, Garrett to Bryan. Umpire—Scull. Time of game—2.15. Scorer—Bullard. Passed balls—Sterner 2. Balk—Davis.

GAME AT ANCON, MARCH 31.

Ancon.	AB.	H.	PO.	A.	E.	Infantry.	AB.	H.	PO.	A.	E.
Lindberg,rf	5	0	2	0	0	Dele'ty,lf1b	4	1	1	1	3
Edwards,ss	4	1	0	0	2	Cassidy,ss.	4	0	3	3	0
Drennan,lf.	5	3	1	0	0	Smith,cf.	3	0	1	0	1
Guptil,cf1b	2	2	1	0	0	Trickey,c.	4	2	6	1	1
Pear'an,3b.	4	1	1	4	0	Weber,rf.	4	0	4	0	0
Snyder,2b.	4	0	5	2	0	VanOtt'n,p	2	0	0	1	2
Nygren,1b.	4	1	10	2	1	Duff,p.	1	0	0	3	0
Hodnot,c.	3	0	7	2	0	Skeris,3b.	4	0	0	1	1
Murray,p.	4	1	0	4	0	Saluski,2b.	2	0	0	4	1
						Lucas, 1b-lf	2	0	9	0	0
						Moch	1	0	0	0	0
Totals	35	9	27	13	3	Totals	31	3	24	14	9

Ancon	1	4	0	0	0	0	1	2	x	8
Tenth Infantry	0	0	0	0	0	0	0	0	0	0

Runs—Ancon: Lindberg, Edwards, Drennan 2, Guptil, Hodnot, Murray 2. Two-base hits—Guptil. hree base hits—Nygren. Sacrifice hits—Edwards. Passed ball—Hodnot. Stolen bases—Drennan 3, Hodnot, Murray 2. First base on errors—Infantry 3, Ancon 4. Base on balls—off Duff 2, off Van Ottman 2, off Murray 3. Struck out—by Duff 1, by Van Ottman 2, by Murray 8. Hit by pitcher—by Van Ottman 1 (Pearman). Left on bases—Ancon 9, Infantry 7. Double plays—Pearman to Snyder to Nygren. Hits—off Duff 4 in 2 innings, off Van Ottman 5 in 6 innings. Umpire—Foster. Time of game—1 55. Scorer—Hoffman. *Mock batted for Van Ottman in the 9th.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending Ppril 10, 1912 (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
April 4	......	5.17	11.28	5.32	11.49
			P.M.		
April 5	......	5.57	12.08	6.10	......
April 6	12.31	6.36	12.48	6.48	......
April 7	1.12	7.16	1.30	7.28	......
April 8	1.54	7.59	2.16	8.10	......
April 9	2.43	8.48	3.12	9.03	......
April 10	3.41	9.52	4.20	10.13	......

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, March 30, 1912. All heights are in feet above mean sea level.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Mar. 24.	124.8	91.2	43.9	17.6	17.6
Mon., Mar. 25.	124.8	91.2	43.9	17.7	17.6
Tues., Mar. 26.	124.8	91.2	43.9	17.8	17.6
Wed., Mar. 27.	124.8	91.2	43.8	17.8	17.7
Thurs., Mar. 28	124.8	91.2	43.8	17.8	17.7
Fri., Mar. 29.	124.8	91.2	43.8	17.9	17.8
Sat., Mar. 30.	124.8	91.2	43.8	17.9	17.8
Height of low water to the nearest foot.	125.0	91.0	44.0		

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning April 1, 1912.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	16
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Plate, per lb.	9
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24
Venison (Imported), Stew, per pound	.12
Forequarter (not under 6½ pounds), per pound	.16
Rack (not under 5½ pounds), per pound	.27
Saddle (not under 7½ lbs.), per pound	.27
Leg (not under 9 pounds), per pound	.27
Chops, per pound	.28
Cutlets	.28

MISCELLANEOUS.	
Caviar, Russian in ½-lb. jars	89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Beef, per pound	25
Eggs, fresh, dozen	*26
one-half dozen only	*14
Bluefish, per lb.	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	14
Fluke, fresh, per pound	10
Oysters, 1 quart, per box	40

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each	60, 70, 80, 90, 1.00
Ducks, Western, about 4½ pounds, each	1.25
Hens, milk fed, for roasting, about 3 pounds, each	50
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	23
Squabs, each	35
Capons, each	2.10
Ducks, teal, per pair	50
Ducks, Blackhead, pair	60
Partridges	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30

CURED AND PICKLED MEATS.	*Price.*
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Half, for boiling, per pound	21
Boiled, per pound	28
Hocks, per pound	‡8
Todd's Smithfield Virginia, per pound	§30
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	†8

DAIRY PRODUCTS.	
Butter—Creamery special, per pound	35
Sheffield Farms, extra fancy, per lb.	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	22
Swiss, per pound	28
Edam, each	1.00
Edam in tins, per tin	26
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**20
Fer-mil-lac, bottle	**20
Ice cream, quart	‡25
½-gallon	‡50

VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	10
Cabbage, per pound	†5
Cucumbers, per pound	20
Carrots, per pound	4
Cauliflower, per pound	8
Egg Plant, per pound	10
Lettuce, per pound	8
Onions, per pound	†5½
Parsley, per pound	†15
Potatoes, white, per pound	3
sweet, per pound	2
new, per pound	5
Parsnips, per pound	4
Spinach, per pound	10
Turnips, per pound	3
Tomatoes, per pound	10
Yams, per pound	3
Apples, per pound	6
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from commissaries; no orders taken for delivery.

§Sold only from cold storage and not from commissaries.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending March 30:

Magdalena, March 24, from New York, with 17 cases horse shoes, 40 kegs nails, 70 kegs bolts, for stock; 10 cases rail bonds, for Atlantic Division; 15 cases rail bonds, for Pacific Division.

Cuban, March 25, from Liverpool, with 9 pieces castings, for Pacific Division.

Prinz Sigismund, March 26, from New York, with 34 bundles scoop shovels, for stock; 20 barrels castings for Mechanical Division.

Duart, March 26, from New York, with 96,258 bags cement, for Atlantic and Pacific Divisions.

Stanley Dollar, March 26, from Colombia River, with lumber, for stock.

Lucy Neff, March 25, from St. Marys, Ga., with 1,066 pieces piling, for stock.

Ocland, March 27, from New York, with 101,546 bags cement, for Atlantic and Pacific Divisions.

Karen, March 27, from New Orleans, with 268 tons pig iron, 2,462 pieces lumber, for Mechanical Division; 1,715 pieces lumber, 78 pieces piling, 3,000 pieces cross arms, for sotck; 5 pieces lumber, for Pacific Division; 2,122 barrels brick, for Panama Railroad Company.

Abangarez, March 28, from New Orleans, with 600 cases grease, 8 cases water closets, 66 cases cotton duck, 10 reels wire rope, 1,411 pieces lumber, 77 pieces piling, for stock; 1,536 pieces lumber, 75 tons pig iron, for Mechanical Division; 7 cases hoist engines, for Fortifications.

Santa Marta, March 28, from New York, with 11 cases copper tacks, 10 cases packing, 201 pieces pipe, 1,375 bundles wire rope, 10 pieces castings, 4 cases machinery, 6 cases linen tags, for stock; 25 bundles splice bars, 8 barrels vault lights, for Atlantic Division; 35 bundles splice bars, 14 barrels vault lights, for Pacific Division; 40 cases incandescent lamps, 200 barrels clay, for Mechanical Division; 39 barrels compound, 61 bundles felt, for Fortifications.

The following vessels arrived, or departed from, the port of Balboa during the week ending March 30:

Arrivals—March 25, *Pachitea*, from Callao; March 26, *Chile*, from Guayaquil; March 26, *Palena*, from Valparaiso; March 27, *Stanley Dollar*, from San Francisco; March 27, *Newport*, from San Francisco; March 29, *Barracouta*, from Central America; March 30, *Manavi*, from Buenaventura, March 30, *Norajo*, from San Francisco.

Departures—March 25, *Mexico*, to Valparaiso; March 25, *Ecuador*, to Guayaquil; March 26, *Trinculo*, to Port Harford; March 26, *Leelanaw*, to San Francisco; March 26, *Babcock*, to San Francisco; March 30, *Chile*, to Guayaquil.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Allianca	P. R. R.	Monday	April	1
Colon	P. R. R.	Monday	April	8
Advance	P. R. R.	Saturday	April	13
Panama	P. R. R.	Saturday	April	20
Allianca	P. R. R.	Friday	April	26

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Sunday	April	7
Allianca	P. R. R.	Sunday	April	14
Colon	P. R. R.	Saturday	April	20
Advance	P. R. R.	Friday	April	26
Panama	P. R. R.	Friday	May	3
Allianca	P. R. R.	Thursday	May	9

NEW YORK TO COLON.

Metapan	U. F. C.	Wednesday	Mar.	27
Prinz Eitel Friedrich	H.-A.	Saturday	Mar.	30
Thames	R. M.	Saturday	Mar.	30
Tivives	U. F. C.	Saturday	Mar.	30
Zacapa	U. F. C.	Wednesday	April	3
Prinz Joachim	H.-A.	Saturday	April	6
Sixaola	U. F. C.	Saturday	April	6
Almirante	U. F. C.	Wednesday	April	10
Prinz Sigismund	H.-A.	Saturday	April	13
Trent	R. M.	Saturday	April	13
Carrillo	U. F. C.	Saturday	April	13
Santa Marta	U. F. C.	Wednesday	April	17
Turrialba	U. F. C.	Saturday	April	20
Prinz August Wilhelm	H.-A.	Saturday	April	20
Metapan	U. F. C.	Wednesday	April	24
Arcadian	R. M.	Saturday	April	27
Prinz Eitel Friedrich	H.-A.	Saturday	April	27
Tivives	U. F. C.	Saturday	April	27
Zacapa	U. F. C.	Wednesday	May	1
Sixaola	U. F. C.	Saturday	May	4
Prinz Joachim	H.-A.	Saturday	May	4
Almirante	U. F. C.	Wednesday	May	8
Tagus	R. M.	Saturday	May	11
Prinz Sigismund	H.-A.	Saturday	May	11
Carillo	U. F. C.	Saturday	May	11

COLON TO NEW YORK.

Blucher	H.-A.	Wednesday	April	3
Santa Marta	U. F. C.	Thursday	April	4
Turrialba	U. F. C.	Tuesday	April	9
Prinz August Wilhelm	H.-A.	Tuesday	April	9
Metapan	U. F. C.	Thursday	April	11
Prinz Eitel Friedrich	H.-A.	Monday	April	15
Victoria Luise	H.-A.	Monday	April	15
Oruba	R. M.	Tuesday	April	16
Tivives	U. F. C.	Tuesday	April	16
Zacapa	U. F. C.	Thursday	April	18
Prinz Joachim	H.-A.	Tuesday	April	23
Sixaola	U. F. C.	Tuesday	April	23
Almirante	U. F. C.	Thursday	April	25
Prinz Sigismund	H.-A.	Monday	April	29
Tagus	R. M.	Tuesday	April	30
Carrillo	U. F. C.	Tuesday	April	30
Santa Marta	U. F. C.	Thursday	May	2
Turrialba	U. F. C.	Tuesday	May	7
Prinz August Wilhelm	H.-A.	Tuedsay	May	7
Metapan	U. F. C.	Thursday	May	9
Prinz Eitel Friedrich	H.-A.	Monday	May	13
Orotava	R. M.	Tuesday	May	14

NEW ORLEANS TO COLON.

Atenas	U. F. C.	Saturday	Mar.	30
Orleanian	U. F. C.	Wednesday	April	3
Parismina	U. F. C.	Saturday	April	6
Cartago	U. F. C.	Wednesday	April	10
Abangarez	U. F. C.	Saturday	April	13
Heredia	U. F. C.	Wednesday	April	17
Atenas	U. F. C.	Saturday	April	20
Orleanian	U. F. C.	Wednesday	April	24
Parismina	U. F. C.	Saturday	April	27
Cartago	U. F. C.	Wedensday	May	1

COLON TO NEW ORLEANS

Abangarez	U. F. C.	Thursday	April	4
Heredia	U. F. C.	Thursday	April	4
Atenas	U. F. C.	Thursday	April	11
Orleanian	U. F. C.	Thursday	April	11
Parismina	U. F. C.	Thursday	April	18
Cartago	U. F. C.	Thursday	April	18
Abangarez	U. F. C.	Thursday	April	25
Heredia	U. F. C.	Thursday	April	25
Atenas	U. F. C.	Thursday	May	2
Orleanian	U. F. C.	Thursday	May	2

Hamburg-American steamers leave Colon for New York via Kington at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 5 p. m.; ships for New York via Kingston on Tuesdays at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, APRIL 10, 1912. No. 33.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Highest Excavation Record.

On Tuesday, April 2nd, 43 steamshovels working in the Pedro Miguel, Culebra, and Empire Districts of the Central Division excavated 67,230 cubic yards of material, car measurement, during the working day of eight hours. This is the highest daily record of excavation in Culebra Cut proper.

Change at Mount Zion Reservoir.

To supplant the concrete reservoir on Mount Zion Hill, which has been put out of service by cracks in the sides and bottom, two 50,000-gallon cylindrical timber tanks have been constructed at a slight elevation below the reservoir. The latter will be repaired and used as a retainer for the overflow from the tanks. The Mount Zion reservoir is at an elevation of 550 feet above sealevel, and supplies water for the villages of Enterprise and Culebra. The water comes from the Rio Grande reservoir and is pumped into the Mount Zion reservoir from the Cucaracha pump station, at an elevation of about 200 feet, located at the base of the hill, directly across a ravine from the Rio Grande air compressor. Approximately 250,000 gallons of water are pumped to Mount Zion daily. The concrete reservoir was erected in 1906, and has a capacity of 528,000 gallons.

Canal Work in March.

The grand total of Canal excavation to April 1 was 165,877,209 cubic yards, leaving to be excavated 29,446,170 cubic yards, or about one-sixth of the entire amount for the completed Canal.

The total for March was 2,803,015 cubic yards, as compared with 3,327,443 cubic yards, in March, 1911.

The dry excavation amounted to 1,886,110 cubic yards, and was principally by steamshovels. The dredges removed 842,649 cubic yards, and 74,256 yards were sluiced at Miraflores Locks, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on the locks at Gatun, Pedro Miguel and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division. the total excavation was 428,880 cubic yards. Of this total, 254 cubic yards were dry excavation.

The total excavation in the Central Division was 1,736,777 cubic yards, all of which was from the prism. The amount taken from Culebra Cut was 1,539,618 cubic yards.

In the Pacific Division, the total excavation was 637,358 cubic yards, 414,023 cubic yards of which was taken out by dredging at the Pacific Entrance and 74,256 by sluicing.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Locks, Dam and Spillway..................	254	....	254
Mindi..................	....	....	
Total..................	254	....	254
Wet excavation—			
Atlantic entrance	103,373	....	103,373
Locks, Dam and Spillway..................	325,253	....	325,253
East Diversion........	....	....	....
Total..................	428,626	....	428,626
Total wet and dry excavation.........	428,880	....	428,880

CENTRAL DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Culebra Cut............	1,539,618	....	1,539,618
Chagres section.	172,607	24,552	197,159
Obispo Diversion......	....	....	....
Total..................	1,712,225	24,552	1,736,777

PACIFIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Locks, Dams and Spillways..................	30,129	....	30,129
Diversions.............	....	....	....
Prism, south of Pedro Miguel Locks........	118,950	....	118,950
Total..................	149,079	....	149,079
Wet excavation—			
Pacific entrance	404,939	83,340	488,279
Miraflores Locks	....	....	....
Diversions....	....	....	....
Total..................	404,939	83,340	488,279
Total wet and dry excavation.........	554,018	83,340	637,358

TOTAL CANAL EXCAVATION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation	1,861,558	24,552	1,886,110
Wet excavation	833,565	83,340	916,905
Total....	2,695,123	107,892	2 803,015

Mean rainfall along Canal (ten stations), 0.15 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc.; that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks.	27,532	93,037	120,569
Concrete laid in dams and spillways.......	7,806	....	7,806
Fill placed in dams....	471,993	110,822	582 755

Relocation of Diversion Channel.

In connection with a small slide on the east bank of Culebra Cut, opposite the southern end of Empire, cracks have appeared in the earth beyond the east diversion, though the channel of the diversion itself is undisturbed. In anticipation of an extension of the slide which would carry away this portion of the channel, allowing the waters in the diversion to drain into the Cut, the channel will be relocated several hundred feet east of the line of the break. Beginning near the concrete powder house, about a hundred and fifty yards south of the east end of the suspension bridge, it will swing out from the present channel to the east and in a curve over 700 yards long return to intersect the diversion beyond the area affected by the slide. The channel is to be thirty feet wide, with a maximum cut of 22 feet, where it will pass through a low saddle. A steamshovel began cutting the trench on April 6 and the work will be rushed to completion, another shovel being cut-in on April 10.

Removal of Old Line of Panama Railroad.

Following the abandonment of the old line of the Panama railroad between Gatun and Gorgona on February 15, work was begun on removing the track, signal system and telephone and telegraph lines between Bohio, 9 miles south of Gatun, and Bridge 15, which crosses the Gatun River, about half a mile east of Gatun station. One track was cut a short distance south of Bohio, and taken up by two independent gangs, one working north towards Bridge 15, and the other south towards Frijoles. As soon as one track was taken up the two gangs started at Ahorca Lagarto and, working away from each other, tore up the remaining track in this district. All track is now out between Bohio and Bridge 15 and one gang is working from Bohio, south. The track between Frijoles and Gorgona, with the exception of Barbacoas Bridge, crosssing the Chagres River just north of San Pablo, was left for the use of the Central Division in making Canal excavation at Tabernilla and San Pablo. The Barbacoas Bridge was dismantled and 3 of the 103-foot girders were transferred to Monte Lirio, to be used in the construction of the bascule bridge over the Gatun River, where it is crossed by the relocated line of the Panama railroad. The 3 other girders were sent to the storage yards of the Depot Quartermaster at Mount Hope.

In disposing of the recovered material, the

NOTES OF PROGRESS.

(Continued.)

serviceability of the rail and crossties was determined on the ground. Unserviceable ties were burned and those in good condition were shipped to Empire, for storage by the Quartermaster's Department. The rail was separated into carload lots, the serviceable painted white on the ends and the unserviceable painted yellow. The unserviceable rail was shipped to Empire and the disposition of the serviceable rail is determined from time to time by the Chief Quartermaster. In crediting the value of recovered material serviceable rail is reckoned at $15.50 per ton of 2,240 pounds; scrap is valued at $5.00 per ton; bridge steel at $10.00 per ton and bridge timber at $10.00 per thousand feet, board measure. Other serviceable material is counted as worth fifty per cent of book prices. Approximately 50 per cent of the total number of ties were in good condition. Telephone and telegraph wires, of which the total number of lines in this section was 48, aggregated in length 480 miles.

The old line between Gatun and Bohio followed the original survey of the Panama railroad, over which the first track was built in 1851–5 by an American company of which John L. Stephens was president, with John C. Trautwine as the first chief engineer. The Canal construction, especially in the building of Gatun Dam, has necessitated some slight alterations of the right of way but for the greater part the track remained in the original course.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 86 per cent completed, 194,537 cubic yards, out of a total of 225,000, having been placed at the close of work on April 6. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
April 1	176	7.00	1
April 2	204	6.45	2
April 3	160	6.30	1
April 4	148	6.30	2
April 5 (Holiday)			
April 6	208	7.30	1
Total	896	34.15	1.4
Previously reported	193,641		
Grand total	194,537		

Ancon Crusher.

DATE.	Hours worked.	Cubic Yards.
April 1	5.25	2,607
April 2	7.05	3,150
April 3	7.25	2,590
April 4	8.30	3,373
April 6 (Holiday)		
April 6	8.05	2,957
Total	36.30	14,667

Porto Bello Crusher.

DATE.	Hours worked.	Cubic Yards.
April 1	3.30	1,735
April 2	3.10	1,778
April 3	4.20	2,058
April 4	4.45	1,726
April 5 (Holiday)		
April 6	4.05	1,836
Total	19.50	9,133

Admission to Examinations.

Attention in invited to the fact that a card of admission will be sent by the Chairman's office to each applicant for civil service examination found to be eligible to be admitted to the examination for which application may be made, immediately upon the receipt of the examination questions, when the exact date can be known. No person should report at Culebra for examination before receiving such a card of admission, or, in case no card of admission has been received, before having previously ascertained by telephone or otherwise the date on which the desired examination is scheduled to be held; such a request should not be made, however, except on the day before the date on which it is understood an examination is to be held.

CONCRETE WORK IN THE LOCKS.

Over 83 per cent of the concrete for the locks is in place, the amount at the close of work on April 6 being 3,500,072½ cubic yards, out of a total of approximately 4,199,400. A total of 23,796½ cubic yards of concrete was laid in the locks during the week ending April 6.

GATUN LOCKS.

Over 92 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on April 6 being 1,857,460½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending April 6, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
April 1	772	12.08	4					841
April 2	274	4.20	2					341½
April 3	652	10.52	4					703
April 4	348	7.38	4					390.
April 5 (Holiday)								
April 6	472	10.40	4					520.
*Portable mixers				277½				
Total	2,518	45.38	3.6	277½				2,795½
Previousley reported								1,854,665
Grand total								1,857,460½

The 277½ yards shown for the two portable mixers are reinforced coocrete and were placed on the following days: April 1st, 69; April 2nd, 67½; April 3rd, 51; April 4th, 42; April 6th, 48.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 98 per cent completed, 830,028 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on April 6- The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
April 1	252	6.00	1	162	15..0	3		414
April 2	230	5.50	1	145	15.50	3		375
April 3	208	5.00	1	142	15.00	4		350
April 4	210	5.00	1	136	10.50	3		346
April 5 (Holiday)								
April 6	294	7.00	1	209	17.00	5		503
Total	1,194	28.50	1	794	73.00	3.6		1,988
Previously reported							4,423	828,094
Grand total							4,423	830,082

MIRAFLORES LOCKS.

Over 59 per cent of the concrete for the system of two twin locks at Miraflores was in place on April 6, the total amount on that date being 812,530 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
April 1	1,998	51.00	8	1,412	21.00	2	683	52.75	9		4,093
April 2	2,018	51.33	8	1,250	18.67	2	726	55.50	9		3,994
April 3	1,714	40.13	8	1,206	18.67	2	741	54.50	9		3,661
April 4	1,704	39.00	8	1,182	12.50	2	688	48.75	9		3,574
April 5	(Holiday										
April 6	1,850	43.00	8	1,166	17.50	2	675	48.25	9		3,691
Total	9,284	224.96	8	6,216	88.34	2	3,513	259.75	9		19,013
Previously reported										3,693	793,517
Grand total										3,693	812,530

STEAMSHOVEL RECORDS.

Work of Central Division Shovels in March.

During the month of March the total amount of material excavated in the Central Division was 1,736,777 cubic yards, of which 374,100 cubic yards were classified as earth, and 1,362,677 cubic yards as rock.

Of this quantity 1,702,125 cubic yards were removed by steamshovels, 24,496 cubic yards by cranes, and 100 cubic yards by hand. Contractors removed 8,016 cubic yards by hand and 2,040 cubic yards by steamshovel.

The high record for the month was made by shovel No. 227, working 26 days in the Culebra District, which excavated 57,266 cubic yards of rock.

The second best record for the month was made by shovel No. 256, working 23 days in the Culebra District and 3 days in the Empire District, which excavated 53,362 cubic yards of rock.

The best record for a shovel of the seventy-ton class was made by shovel No. 124, working 26 days in the Culebra District, which excavated 41,014 cubic yards of earth.

Shovel No. 227, working in the Culebra District, made a high record for one day by excavating 3,040 cubic yards of rock on March 30.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement.

The best record for the month and for one day are shown in the following table:

BEST RECORDS FOR THE MONTH.

Shovel No.	Cubic Yards.			No. of days at work.
	Earth.	Rock.	Total.	
CULEBRA DISTRICT.				
227		57,266	57,266	25½
219		50,762	50,762	26
207		50,981	50,981	26
EMPIRE DISTRICT.				
216	25,088	22,560	47,648	25
226		39,384	39,384	26
228		45,444	45,444	26
PEDRO MIGUEL.				
231		47,496	47,496	26
253		38,264	38,264	26
CHAGRES.				
262	18,704	15,000	33,704	25
265	16,149	28,800	44,149	26

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
262	Chagres	Mar. 8	Earth	2,950
220	Empire	Mar. 9	Rock	2,650
220	Empire	Mar. 11	Rock	2,575
210	Empire	Mar. 5	Rock	2,564
227	Culebra	Mar. 30	Rock	3,040
256	Culebra	Mar. 15	Rock	2,964
124	Culebra	Mar. 14	Earth	2,900
124	Culebra	Mar. 1	Earth	2,830
253	Pedro Miguel	Mar. 2	Rock	2,736

Steamshovel No. 225, Cristobal Terminal Docks.

The following statement shows the performance of Steamshovel No. 225, for the month of March, 1912. This steamshovel is working in the borrow pit at Folks River, excavating rock for filling the mole at the Cristobal Terminal Docks:

QUANTITIES OF EXCAVATION (86% ROCK, 14% EARTH.)

	Cubic Yards.
By car measurement	60,150
By cross section	55,315
Loaded on cars	52,150
Cast over	3,165
Cubic yards per car	9.16

OPERATION REPORT.

Days worked	26
Hours under steam	208.00
Hours worked	139.15
Per cent of time under steam that shovel worked	66.9
Cubic yards per working hour	396
Average daily output, cross-section measurement	2,127

DELAYS.

	Hours and minutes.	P. C. of time under Steam
Mining	5.10	2.5
Cleaning track	.15	0.2
Repairs	12.25	6.0
Waiting for cars	7.20	3.5
Switching	14.10	6.8
Derailments	1.55	0.9
Moving up	17.35	8.5
Cutting out, 6 times	9.55	4.7
Total	68.45	33.1

Central Division Unloaders for March.

Location.	No. of unloaders.	No. of trains.	No. of cars.
Balboa	4	1,271	25,420
Miraflores	3	731	14,620
Gamboa	4	1,215	25,515
Total	11	3,217	65,555

CANAL MEDAL LIST.

(*Continued*)

Below are published the names of American employes of the Isthmian Canal Commission, who have completed two years of continuous service on the Isthmus during the twelve months ending December 31, 1911, and are in consequence entitled to receive a Canal Medal. The date shown opposite each name is that from which medal service is completed.

The list is now published in order that it may be carefully checked by those interested. Any omissions, errors in spelling of names, or in the dates from which service is reckoned, should be promptly reported to the Office of the Chairman, at Culebra, for correction.

The Medal list covering employes of the Panama Railroad will appear in a later issue, as well as the bar lists for both I. C. C. and P. R. R. employes.

The Heads of divisions are requested carefully to check their lists of American employes on the silver roll, and to report any omissions on the medal or bar lists to the above office.

Name.	*Date.*
1909.	
Parker, George	Oct. 14
Round, Arthur B	Oct. 14
Seyse, Robert P	Oct. 14
Moody, Frederick L	Oct. 15
Tbompson, Minor E	Oct. 15
Adams, John H	Oct. 16
Severy, Frank J	Oct. 16
Cookson, Alfred B	Oct. 18
Wellfare, Albert A	Oct. 18
Yates, George S	Oct. 18
Robertson, Clarence	Oct. 19
Robertson, Elpha H	Oct. 19
Uderitz, George	Oct. 19
Alffermann, Frank M	Oct. 20
Gabriel, Elizabeth E	Oct. 20
Gardiner, Thomas B	Oct. 20
Hastings, Louis B	Oct. 20
Hoover, Alan C	Oct. 20
McQuirk, Ed. C	Oct. 20
Ridge, John E	Oct. 20
Whitlow, William W	Oct. 20
Buffin, William T	Oct. 21
Zimmerman, William G	Oct. 21
Kennedy, Walter A	Oct. 22
Rawley, Frank	Oct. 23
Vaughan, Charles V	Oct. 23
Merrill, Ralph	Oct. 26
Farrelly, Edward	Oct. 27
Fransen, Hans P	Oct. 27
Geissbardt, William O	Oct. 27
Kopke, Rudolph	Oct. 27
Snyder, William	Oct. 27
Speer, James W	Oct. 27
Frost, Florita D	Oct. 28
Adams, Thomas	Oct. 29
Horne, James T	Oct. 30
Coutermarsh, Henry W	Oct. 31
Koch, Jacob	Oct. 32
Rubier, Herbert C	Oct. 31
Shackelton, Wm. H	Oct. 31
Terrell, Elmer E	Oct. 31
Wynne, Mary A	Oct. 31
Buker, Theodore A	Nov. 1
Dalton, William L	Nov. 1
Jamieson, Thomas	Nov. 1
McCloskey, Ray K	Nov. 1
Penman, John	Nov. 1
Robertson, Thomas J	Nov. 1
Smith, Ralph B	Nov. 1
Coughlin, John T	Nov. 2
Herring, Charles O	Nov. 2
Kelley, Phillip	Nov. 2
McCollum, Victor W	Nov. 2
Porter, Joseph I	Nov. 2
Cauthers, Ralph A	Nov. 3
Gallaher, William F	Nov. 3
Horham, James L	Nov. 3
Mitchell, Joseph P	Nov. 3
Shafer, Oliver G	Nov. 3
Shedd, Frank P	Nov. 3
Shell, Bertram E	Nov. 3
Tucker, Fred D	Nov. 3
McIntosh, Walter L	Nov. 4
Noble, Robert H	Nov. 4
Kingsbury, Ernest	Nov. 5
Kimble, Calvin P	Nov. 6
Whiston, Albert	Nov. 9
Browning, Albert S	Nov. 10
Conley, George L	Nov. 10
Hall, Mark A	Nov. 10
Hayes, James	Nov. 10
La Fountain, Frank	Nov. 10
Stoddard, Charles B	Nov. 10
Wheeler, William B., Jr	Nov. 10
Zilles, Leon	Nov. 10
Moore, Clifford E	Nov. 11
Short, William G	Nov. 11
Tudor, Floyd W	Nov. 11
McGowan, Talmage	Nov. 12
McCandless, Charles	Nov. 13
Aitken, David R	Nov. 15
Drysdale, Thomas	Nov. 15
Stanford, Paul F	Nov. 15
Cousineau, Charles	Nov. 16
Lewis, James E	Nov. 16
Mengel, Charles E	Nov. 16
Oliver, Lando	Nov. 16
Carroll, James	Nov. 18
Stripling, Sheldon	Nov. 18
Laylander, King C	Nov. 20
Mitchell, James C	Nov. 20
Anderson, Vitalis	Nov. 21
Patterson, Marian	Nov. 21
Rice, Okey J	Nov. 21
Barrow, Alan D	Nov. 23
Stuckert, George A	Nov. 23
Nicholls, Harry	Nov. 24
Vanechanakos, Antonio	Nov. 24
Allen, Roy	Nov. 26
Connolly, Edward C	Nov. 26
Dayton, Arthur V	Nov. 26
Hoff, Frank W	Nov. 26
Shay, Charles D	Nov. 26
Waite, William	Nov. 26
Twitchell, Carl R	Nov. 27
Von Pflugk, Herman A. V.	Nov. 30
Crawford, James S	Dec. 1
Freelove, Charles	Dec. 2
Shourds, William G	Dec. 2
Greenhouse, Samuel	Dec. 3
McLeod, Miles E	Dec. 3
Merrill, Adelbert S	Dec. 3
Payne, Ralph M	Dec. 3
Wheat, Lee	Dec. 3
Gullberg, Eric	Dec. 4
Jones, James F	Dec. 6
Wood, Charles E	Dec. 6
Brunson, Charles A	Dec. 7
Fuhrman, David L	Dec. 7
Mergendoller, John	Dec. 7
Clark, Herbert C	Dec. 9
Barnes, Samuel	Dec. 11
Romich, John M	Dec. 11
Jackson, Alexander	Dec. 14
Souders, Ervin G. C	Dec. 14
Thompson, Edward	Dec. 14
Heng, Christian	Dec. 15
Larsen, Christian	Dec. 15
McLorne, John C	Dec. 15
Peterson, Charles G	Dec. 15
Reese, George	Dec. 15
Sherry, Hugh	Dec. 15
Smith, George W	Dec. 15
Griffin, William P	Dec. 16
Martin, Kent K	Dec. 16
Beard, Arthur	Dec. 17
Atherton, Ray E	Dec. 18
Drain, Oscar N	Dec. 18
Fowler, Burton	Dec. 18
Townsley, Louis	Dec. 18
Clendenin, Elmer E	Dec. 20
Powell, Samuel H	Dec. 20
Wilkins, Hal E	Dec. 20
Claussen, Lewis G	Dec. 22
Gartrell, Frank D	Dec. 22
Smith, Charles	Dec. 22
Tanner, Edwin E	Dec. 23
Burmester, Raymond	Dec. 24
Rodgers, Irwin W	Dec. 24
Hocker, Harry A	Dec. 27
Magnuson, Charles	Dec. 27
Wenzel, Edward R	Dec. 27
Koperski, John I	Dec. 29
Smith, Harry A	Dec. 29
Campbell, Oscar F	Dec. 30
Mudgett, Edward E	Dec. 30

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M'THS.	CULEBRA SECTION.*								CHAGRES SECTION.**				
	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.
Jan.....	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	1,416,035	169,447	389,399	175,802	255,385	28,357
Feb	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	1,349,569	200,145	450,182	286,309	219,550	66,145
March .	132,840	239,178	815,270	1,290,885	1,434,597	1,509,728	1,728,748	1,539,618	324,233	619,491	484,846	297,339	172,607
April ..	126,749	213,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	....	329,483	510,020	428,777	102,103	....
May....	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	....	235,902	386,170	248,974	29,783	....
June ...	76,905	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	....	322,145	275,900	164,389	32,288	....
July ...	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	....	345,757	233,897	166,106	22,284	....
August	49,210	244,823	786,866	1,171,927	1,173,370	1,377,714	1,442,402	....	368,683	231,543	234,404	21,892	....
Sept ...	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	1,340,173	....	346,948	235,818	234,290	21,272	....
Oct	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	1,306,971	....	424,911	221,409	271,409	12,216	....
Nov....	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	....	336,390	93,619	260,882	12,248	....
Dec....	70,630	307,689	1,025,485	1,210,046	1,152,022	1,211,400	1,351,082	....	383,948	105,044	197,481	10,809	....
Totals .	914,254	2,702,991	9,177,130	3,912,453	14,557,034	15,398,599	16,596,891	4,305,222	3,787,992	3,752,492	3,153,669	1,037,169	267,109

ATLANTIC DIVISION.† PACIFIC DIVISION.¶

MONTHS.	ATLANTIC DIVISION.† GATUN LOCKS, DAM AND SPILLWAY.††					PACIFIC DIVISION.¶ PEDRO MIGUEL LOCKS.‡					MIRAFLORES LOCKS, DAMS AND SPILLWAY.‡‡				
	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.
January...	292,155	102,690	125,011	65,889	1,330	....	83,726	27,320	15,690	24,969	7,203	61,202	31,479	48,744	95,609
February.	282,797	95,031	123,738	50,511	1,228	....	58,242	9,486	6,809	18,480	39,046	53,689	15,300	12,936	47,426
March....	374,598	90,051	132,007	51,431	254	....	95,624*	6,784	674	1,777	73,194	51,417	18,184	72,739	28,352
April.....	373,456	70,009	103,243	12,548	....	....	101,365	9,129	255	....	98,943	60,060	12,148	79,751	....
May......	266,747	52,786	82,958	17,677	....	....	57,523	10,405	5,905	....	73,023	47,588	20,250	57,975	....
June.....	244,951	36,556	88,088	4,840	....	13,228	70,971	8,420	7,454	....	68,691	55,653	21,994	38,023	....
July	213,359	39,058	95,503	6,897	....	22,648	77,503	4,410	6,273	....	104,369	50,999	11,990	97,884	....
August .	188,262	40,346	99,737	22,558	....	22,217	58,025	12,789	220	....	94,248	35,446	17,548	102,249	....
Sept'mber	145,990	49,945	103,040	3,489	....	28,833	48,825	10,405	3,472	....	90,923	31,803	8,590	96,112	....
October...	154,064	57,321	118,327	112	....	48,875	39,002	7,433	5,365	....	74,700	25,349	9,850	107,790	....
November	118,278	63,452	94,552	....	....	55,401	20,207	10,636	12,962	....	52,930	18,644	9,400	84,894	....
December	119,904	96,590	72,030	....	....	65,578	28,342	11,195	17,320	....	69,650	20,083	17,906	79,480	....
Totals	2,774,561	793,835	1,238,234	235,952	2,812	256,780	739,355	128,412	82,399	45,226	846,920	511,933	194,639	878,577	171,387

*Total to April 1, 1912, 77,808,046 cubic yards. Excavated in 1904, May to December, 243,472 cubic yards.

**Total to April 1, 1912, 12,191,200 cu. yds., of which 192,769 cu. yds. were removed in 1907, 188,239 cu. yds. were removed by sluicing.

†Dry excavation at Mindi Hills began in July, 1907. There were excavated 172,851 cubic yards, 1907; 590,955 cubic yards 1908; 713,015 cubic yards, 1909; 662,995 cubic yards, 1911; 56,382 cubic yards, 1912; total to April 1, 2,196,198 cubic yards.

¶There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 889,141 cubic yards at different points in prism to Apr. 1, 1912. There were also 172 cubic yards removed by steamshovels outside of prism during October, 1908.

††Total to Apr. 1, 1912, 6,412,201 cubic yards; in this total are included 26,628 cubic yards excavated October to December, 1906, and 1,340,179 cubic yards in 1907.

‡Total to Apr. 1, 1912, 1,257,172 cubic yards. ‡‡Total to Apr. 1, 1912, 2,603,456 cubic yards.

WET EXCAVATION.

MONTHS.	ATLANTIC DIVISION.† ATLANTIC ENTRANCE.§						PACIFIC DIVISION.†† PACIFIC ENTRANCE.§§							
	1907.	1908.	1909.	1910.	1911.	1912.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
January...	111,100	490,701	521,050	510,055	520,181	520,228	....	95,940	94,710	460,250	469,529	518,936	379,810	412,118
February ..	110,002	427,722	444,910	493,448	455,318	581,399	....	95,940	93,480	663,519	671,477	285,791	386,866	432,796
March......	84,145	546,886	461,208	412,325	391,736	103,373	....	116,820	92,319	783,281	865,696	462,588	639,761	404,939
April.......	69,889	496,366	470,635	190,574	492,579	....	....	110,700	104,855	676,539	731,767	534,322	439,622	....
May........	133,847	564,386	315,370	447,578	514,178	....	....	112,340	122,157	530,466	720,753	484,509	548,047	....
June.......	124,118	572,749	182,575	458,021	452,098	....	50,676	62,697	133,575	656,621	844,685	475,486	576,100	....
July........	109,922	625,497	348,451	423,092	425,195	....	41,533	98,400	108,338	696,170	733,181	515,782	520,692	....
August....	194,297	638,217	422,846	508,829	367,456	....	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....
September	403,842	624,776	410,574	451,873	420,434	....	114,308	105,780	153,975	750,080	662,976	473,585	534,667	....
October....	415,120	505,260	314,778	549,788	470,400	....	81,836	97,170	357,122	762,276	720,920	467,873	339,815	....
November.	422,797	570,832	457,889	600,708	742,242	....	71,176	92,988	365,423	609,089	627,791	425,370	462,283	....
December.	442,835	679,604	489,121	482,370	533,409	....	71,094	90,528	349,551	729,960	727,460	387,034	278,960	....
Totals.....	2,621,914	6,742,996	4,839,407	5,528,661	5,785,226	1,205,000	485,153	1,191,233	2,143,789	8,056,025	8,399,498	5,538,745	5,736,864	1,249,853

†Dredges removed 38,425 cubic yards at Gatun Dam site in 1907, and 813,786 cubic yards at Gatun Locks in 1908 and 1909 and 1912 of which 325,253 was removed in March, 1912.

††Excavated at Miraflores Locks 309,647 cubic yards in 1909; 156,125 cubic yards in 1910; 176,578 cubic yards in 1911; total 642,350 cu. yds.

§Total to Apr. 1, 1912, 28,150,669 cu. yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906.

§§Total to April 1, 1912, 32,801,160 cubic yards. Of this amount, 843,980 yards were removed by monitors.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.†			PEDRO MIGUEL LOCKS.††			MIRAFLORES LOCKS ‡		
	1910.	1911.	1912.	1910.	1911.	1912.	1910.	1911.	1912.
Jan	54,136	72,919	34,983	16,273	38,513	15,077	....	24,018	48,416
Feb............	55,696	72,103	26,664	13,218	37,011	12,639	146	20,896	63,893
March	60,998	86,884	27,532	18,793	44,716	9,331	314	31,173	83,706
April..........	63,227	67,361	....	24,522	28,635	....	13	38,758	....
May...........	74,273	67,844	....	29,576	19,135	....	27	36,154	....
June	89,401	55,305	....	30,631	18,243	....	1,603	26,536	....
July...........	84,001	71,046	....	41,464	19,906	....	3,672	32,840	....
Aug............	85,686	66,928	....	51,264	20,736	....	6,030	57,003	....
Sept............	76,720	57,298	....	50,702	15,379	....	18,133	56,083	....
Oct.............	86,949	53,636	....	61,422	25,637	....	22,159	60,873	....
Nov............	75,152	43,907	....	64,248	19,622	....	23,871	41,726	....
Dec............	80,212	43,590	....	42,834	14,360	....	21,533	48,772	....
Total........	886,451	758,821	89,179	444,947	301,893	37,047	97,501	474,832	196,015

Spillway, Gatun Dam, March 17, 1909—April 1, 1912, 195,129 cu. yds.
Miraflores Dam, to March 1, 1912, 321 cubic yards.
†116,072 cu. yds in 1909. ††33,856 cu. yds in 1909. ‡102 cu. yds in 1909.

FILL PLACED IN DAMS.

M'THS.	GATUN.*				PEDRO MIGUEL.†		MIRAFLORES.‡			
	1911.		1912.		1911.	1912.	1911.		1912.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan...	211,992	218,690	173,900	239,266	......	38,044	89,243	24,685	....	24,920
Feb..	301,733	211,008	211,399	145,221	......	35,153	87,335	32,404	....	26,475
Mar..	342,800	255,047	242,874	229,059	......	86,252	25,131	23,940	......	24,570
April	368,658	205,130	....	....	......	......	14,100	67,260	....	....
May..	419,348	207,751	....	....	......	......	18,353	30,032	....	....
June .	432,008	227,996	....	....	......	......	53,858	28,315	....	....
July..	324,947	201,996	....	....	14,865	......	24,957	54,415	....	....
Aug..	259,389	232,426	....	....	24,812	......	25,000	72,203	....	....
Sept..	261,838	194,497	....	....	4,052	......	6,409	34,480	....	....
Oct...	214,320	218,305	....	....	3,400	......	7,130	37,250	....	....
Nov..	266,603	207,157	....	....	3,190	......	14,370	31,800	....	....
Dec..	89,752	233,063	....	....	7,350	......	....	23,730	....	....
T'tal	3,493,388	2,613,066	628,173	613,546	57,669	159,449	366,336	460,514	......	75,965

*Wet fill to Jan. 1, 1911, 5,833,076 c. y.; Dry fill to Jan. 1, 1911, 6,128,105 c. y.
†Dry fill to Jan. 1, 1911, 260,852 c. y.
‡Wet fill to Jan. 1, 1911, 291,712 c. y. Dry fill to Jan. 1, 1911, 609,863 c. y.

CANAL EXCAVATION TO DATE.

By French Companies		78,146,960
French excavation useful to present Canal		29,908,000
By Americans—		
Dry excavation	103,242,580	
Dredges	62,634,629	
Total		165,877,209
May 4 to December 31, 1904	243,472	
January 1 to December 31, 1905	1,799,227	
January 1 to December 31, 1906	4,948,497	
January 1 to December 31, 1907	15,765,290	
January 1 to December 31, 1908	37,116,735	
January 1 to December 31, 1909	35,096,166	
January 1 to December 31, 1910	31,437,677	
January 1 to December 31, 1911	31,603,899	
January 1 to March 31, 1912	7,866,246	

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation	8,608,399	37,611,279	*108,252	9,616,543
Dredges	29,002,800		9,724,795	
Central—				
Culebra Cut	77,808,046	89,999,246	11,635,959	11,802,050
All other points	12,191,200		166,091	
Pacific—				
Dry excavation	4,823,174	38,266,684	2,108,906	8,027,577
Dredges	33,443,510		5,918,671	
Grand totals		165,877,209		29,446,170

*Estimate exceeded by this amount.

TRANSFORMER EQUIPMENT.

Features of Distribution of Electric Current through Lock Walls.

The Washington office of the Isthmian Canal Commission is soon to request bids upon electrical equipment for installation in the various transformer rooms distributed throughout all the lock walls. An effort will be made to purchase the large number of small items required, such as switches, instruments, copper buses, overload devices, panel boards, and other devices, all built up into large and complete group units, so that the installation work to be performed by the Commission will be at a minimum, consisting chiefly of assembling the units in place and joining the cable connections.

Articles have appeared in The Canal Record at various times describing the manifold uses of electrical motive power applied to drive lock machinery, such as non-rising stem valve machines, miter gate machines, miter forcing machines, cylindrical valve machines, towing locomotives, spillway machinery, motor-driven pumps, and others, and the intricate, but nevertheless simple and commanding, control of the motors has also been described in detail. It will be remembered that the permanent source of electrical energy is to be the hydro-electric station at Gatun spillway, where three 2,000-kilowatt units are soon to be installed. Energy is generated at a potential of approximately 2,200 volts; the motors require electrical service at 240 volts; consequently, there are required transformer units possessing a 9 to 1 ratio, to link the power circuits from the hydro-electric station to the mains feeding the motors. It is the transformers with auxiliary equipment which are about to be purchased.

Duplicate Equipment—Extensive provision has been made to secure continuity of electrical service at the lock motors by installing all equipment, including cables and buses, in duplicate. Three units at the hydro-electric station, two of which are ample to carry the immediate peak load, insure a conservative reserve in generating capacity. Each generator is provided with double-throw switches connecting to either of the duplicate buses. From the station, duplicate circuits are carried through isolated duct lines across the dam to the lock walls. One set of feeders enters the lock walls from the upper end and another set enters the lock walls from the lower end. The feeders entering the lock at either extremity are equipped with transfer switches to permit isolating the feeders so as to provide either separate service to the machinery of either of the lock chambers or separate service to any of the lock walls. In each of the lock walls duplicate feeders are run to the different transformer rooms. The high tension buses of each transformer room are looped into the feeders and are provided with sectionalizing switches to enable the cutting out of all high voltage conductors from a seat of trouble between any two transformer rooms. In the transformer rooms, the transformers are in duplicate and the buses—both high voltage and low voltage—are also in duplicate. This description of the duplicate electrical features applies more particularly to the Gatun Locks; similar provisions are made at both the Pedro Miguel and the Miraflores Locks.

Transformer Rooms—Each of the transformer rooms is practically a self-contained sub-station. In all the locks there is a total of thirty-six rooms—sixteen at Gatun, eight at Pedro Miguel, and twelve at Miraflores. At Gatun, for instance, there are four rooms in each of the side walls and eight in the center wall, the center wall rooms being arranged so as to separate the equipment required for one lock chamber from that of the other lock chamber. In each of the walls, the transformer rooms are grouped near the centers of power distribution at each end of a lock near the miter gates, providing thereby for minimum energy losses in the low-tension mains. The equipment of a transformer room may be divided in four groups, viz., (1) duplicate power transformers, each of approximately 200 kilowatts capacity; (2) a single lighting transformer of 25 kilowatts capcity; (3) an oil switch bank, containing ten single-throw oil switches; and (4) a seven-panel distribution switchboard, containing twelve power switches and a panel of lighting equipment. In addition, there will be required a miscellaneous assortment of materials and auxiliary equipment to complete the installation. The arrangement of the transformer room is shown in plan and elevation in Figure I.

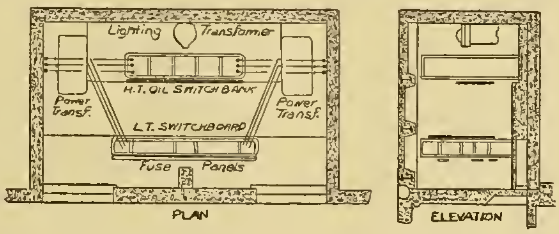


Fig. 1—Layout of Transformer Room.

Provisions against Humidity—In order to obviate, as far as practicable, certain operating difficulties occasioned by rapid deterioration of electrical apparatus in a tropical climate, the equipment is to be of the best grade only, with particular attention given to the deleterious effect of Isthmian humidity. Moisture in the air results in a rapid corrosion of metallic parts—particularly of iron and steel. Where it is absolutely necessary to use iron, as in framework for oil switches and switchboard panels, the pipe supports are to be heavily galvanized (or sherardized), and, after installation, are to be well painted or varnished. In instruments and other delicate electrical contrivances, the use of iron and steel is eliminated and either brass or copper substituted, except where soft iron is absolutely necessary to carry magnetic fluxes, in which case the iron cores are specially impregnated. In a few cases the use of sheet and cast iron is permitted whenever these parts can be protected easily by future painting.

Another deteriorating effect of tropical humidity is to be found in the rapid destruction of ordinary electrical insulation. The destructive influence of excessive moisture has been demonstrated in actual local tests. A transformer is a particularly dangerous piece of equipment when poorly insulated. There is always a possibility of a break-down which passes a high potential into close proximity to an attendant, with consequent jeopardy of human life. A transformer may show perfect insulation when new, and yet go out of commission in a very few years, even under the best of operating conditions. Upon the Isthmus, the transformers will of necessity operate under adverse circumstances, and, to meet this probable condition, the insulation specified for all the transformer room equipment is to be of a very superior quality, strongly guarded against failure.

Transformers—The power transformer is to be of the air-cooled, oil-insulated type designed to operate upon a three-phase, 25-cycle circuit and furnishing a normal pressure transformation of 2,200 volts to 240 volts. The case of the transformer is to be of corrugated sheet steel with cast iron base, top rim, and cover. The core and windings are immersed in a freely circulating oil. The design, construction, and appurtenances of the transformer are to be most modern in every respect. The rating of the transformer is to be such that either one of the units is capable of sustaining the entire load on the transformer room, the second transformer being a duplicate and in reserve; normal operation, however, will probably be such that the mains connected to the locomotive track will be loaded upon one transformer, and the mains to the machinery motors will be connected to the second transformer. In event of a break-down of either transformer or feeder the mains can be quickly transferred to the alternate transformer.

The lighting transformer is to be very similar to the power transformer, but of smaller capacity (25 kw.) and single-phase instead of three-phase. The function of this transformer is to take single-phase energy of the primary feeders at 2,200 volts between wires and transform it to energy at 220-110 volts, for three-wire Edison service to about 7,000 lamps distributed throughout the locks.

Oil Switches—The oil switch bank consists of ten single-throw oil switches mounted upon a rigid pipe framework. The oil switches are connected to the transformers and to the feeders. Three-pole switches are required for power purposes, and two-pole for lighting. Double-throw switches on the transformers are obtained by connecting a common lead of two adjacent studs of single-throw switches. Overload protection is provided for by means of current transformers, inverse time-limit relays and tripping coils. In order to furnish all attendants with ample protection against accidental contact with dangerous potentials, great pains have been taken to make the equipment safe and "fool-proof." All conductors are to be especially well insulated, and screens are to surround the buses and conductors as a protection against mechanical injury.

In order to overcome one particularly dangerous operating feature, a special design has been resorted to. In the maintenance of oil switches, it is necessary to clean out the oil and inspect the contacts at periodic intervals, and, owing to methods of connections, it is often possible that the contact studs are charged to an unsafe potential. The usual practice is to insert knife-blade disconnecting links in each of the leads to the oil switches.

These knife blades are satisfactory where the installation is isolated and where the inspection and repairs are at rare intervals, but, in the limited space of the transformer rooms, the necessary large number of knife blades assumes very cumbersome dimensions. The proposed design is simple in the extreme, contemplating a one-link lever arrangement to drop and disconnect the entire switch—can, insulators, studs, slate, and handle—away from stationary contacts rigidly secured to the pipe framework. A proper development of this device will solve a knotty problem for many a central station designer and engineer.

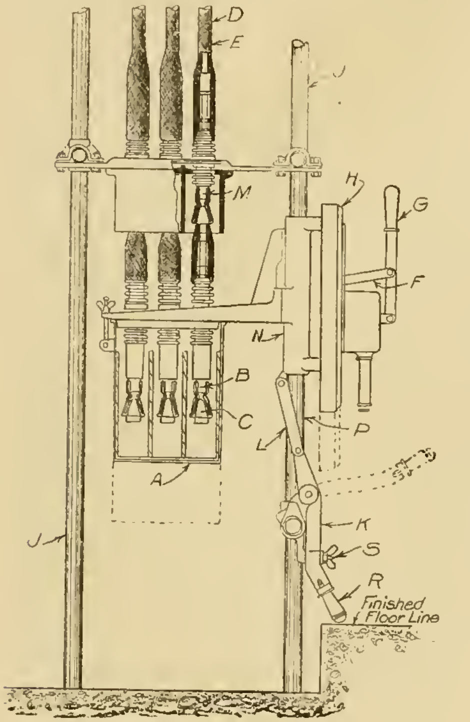


Fig. 2—Detail of Disconnecting Device.

Figure 2 is a sketch to illustrate the manner in which the disconnecting device operates. An oil switch is a mechanism which breaks the contacts of a high voltage circuit under oil, the oil acting both as an insulating medium and as a disruptive fluid to quench the arc formed at the break. Referring to the figure, which shows a manually controlled oil switch, (*a*) is a pot containing oil, in which pot are immersed the contact studs (*b*) and the contact blade. (*c*) The electric current ordinarily passes from one external conductor (*d*) through the contact studs and blade and out the other conductor (*e*). To interrupt the flow of current the blade (*c*) is lowered by means of the operating levers (*f*) controlled by the handle (*g*) which is mounted upon a slate panel (*h*) in front of the switch. The entire unit is supported upon a pipe framework (*j*).

When necessary to inspect the switch, the pot (*a*) is dropped and the contacts are exposed. If these contacts are "alive," an attendant is unable to make repairs safely, and, in order to become assured that the contacts are "dead," the disconnecting device is provided. This particular device contemplates dropping the entire switch by means of the lever (*k*), connected through the link (*l*) to the bracket which carries all parts of the oil switch. Stationary contact studs are provided on the conductors at (*m*), and the oil switch studs are made double-ended so as to make contact at both the lower and the upper ends. The oil switch bracket is bolted to a cross-head (*n*) which rides vertically upon brass guides (*p*). By raising the handle (*r*) the entire oil switch and operating mechanism are lowered bodily away from the stationary studs (*m*), thereby breaking the circuit at (*m*). An attendant once having dropped the switch is able to repair and renew any part of the oil switch without danger to personal safety.

The opening of the blade (*c*) under oil is a frequent operation, whereas the dropping of the entire can is rather infrequent; hence there is little liability of a necessity of renewals at the stationary contacts (*m*). Adjustments for alignment are provided in the brass guides, in the plate supporting the stationary studs, and in the individual switch contact studs. The disconnecting lever (*k*), when in disuse is maintained in position by a wing nut (*s*), the handle being removable.

The oil switches total 372 in number for all locks. The rating will be 300 amperes at 2,200 volts and 25 cycles. The oil to be used in both the transformers and the oil switches is to be of an especially high grade. The specifications covering the oil rigidly stipulate the general composition and requirements. As the oil is to serve as an insulating medium and is to quench arcing at contacts, the requirements of break-down voltage are rather severe, and the method of testing the oil is exceptionally rigorous and exhaustive.

Distributing Switchboard—The distributing switchboard consists of seven panels of 2-inch slate, six panels being used for mounting twelve power switches and one panel for lighting switches and circuit breakers. The power switches are of a three-pole, double-throw, double-blade, back-connected lever type rated at 600 amperes. The switchboard is built upon a pipe framework, which is assembled in the shops of the manufacturer ready for erection. Each switch is fused upon small panels mounted upon the framework in rear of the board proper. From the fuses, copper bar connections are to be provided to the cable terminals. The distributing mains will consist principally of No. 0000, B. & S. gage, three-conductor, lead-covered cable.

Features of Special Interest—The points of special interest in the transformer rooms are the installation of built-up units of smaller apparatus, the careful insulation of the transformers and other electrical conductors, the painstaking effort made to prevent corrosion of metal parts, the absolute protection assured by the design of equipment—both personal and operating safety—and the unique adaptation of a disconnecting device to suit local requirements.

Canal Zone Rifle Club.

A qualification shoot for the marksman's course was held at the Gamboa range on Sunday, April 7, by the Canal Zone Rifle Club, with the following results:

Name.	200 Yds.	300 Yds.	500 Yds.	600 Yds.	Total
Gill	43	44	45	45	177
Ferris	40	42	46	43	171
Taylor	40	41	48	39	168
Greene	37	39	40	44	160
Walraven	39	34	45	41	159
Bernson	30	40	41	37	148
Haynes	39	40	30	38	147
Johns	29	39	44	26	138
Rogers	34	37	22	25	118

The sharpshooter's course will be shot in the near future, including the skirmish run and rapid fire.

SOCIAL LIFE OF THE ZONE.

Church Notes.

On Thursday afternoon, April 4, under the auspices of the Woman's Foreign Missionary Society of the Methodist Episcopal Church, Panama, two memorial windows were unveiled in the church parlors. One window is to the memory of Mrs. A. H. Stewart, who died in March, 1910, the other, the so-called missionary window, commemorates the founding of the society on November 12, 1902. The plate below the colored glass bears the names of the organizers and charter members, who were Mrs. J. Leon Webster, Mrs. E. M. Keyser, Mrs. W. W. Gray, Mrs. A. R. Stroup, Mrs. J. I. Veen, Mrs. W. F. Bennyhof and Mrs. A. H. Stewart. The money for these windows was raised by donations from the Ancon Woman's Club and the Ladies Aid Society of the Methodist church. There are now three memorial windows in the sea-wall building, the first having been placed in the church to the memory of their daughter by Bishop Frank M. and Mrs. Bristol in 1909. Those taking part in the services of unveiling were Mrs. E. M. Keyser, Mrs. Bossemaier, Miss Williams, and Mrs. Taylor. Letters were read from Mrs. Webster and Mrs. Gray in Texas. The collection taken up was voted to the Canal Zone Federation of Women's Clubs for their fund for the schooling of a blind boy.

The monthly meeting of the Woman's Auxiliary of the Empire Christian League was held at the home of Mrs. Philip Kelly on Wednesday, April 3. The lesson subject was "the democracy of religion." Mrs. A. A. Nellis was the leader and papers were read by Mrs. Soule, Mrs. Wright, Mrs. Myers, Mrs. Goolsby, Mrs. Catto and the president, Mrs. Beck. The auxiliary will hold a "Box Social" at the monthly meeting of the Empire Christian League on April 24, at the home of Mr. and Mrs. E. P. Beck. The proceeds from the sale of the boxes will be devoted to the work of the auxiliary.

The entertainment to be held by the Woman's Altar Guild of Christ Church, Colon, will be on April 19, instead of April 10 as previously announced. The program will consist of a French farce entitled "*Ici on Parle Francais.*" There will also be music and the evening will close with an informal dance.

Easter Sunday was marked by special choral services in the Zone churches. In the Cristobal Union church the Sunday school had special exercises and the Easter sermon was preached in the evening by the pastor, the Rev. C. H. Elliott; at Gatun there were two services, the Sunday school sharing in the 10.30 service. There were two sermons on the resurrection by the pastor, the Rev. C. O. Purdy. Special exercises were held by the Culebra Sunday school and each child received an Easter egg. The pupils of the Methodist Sunday school sang Easter hymns in Spanish and in English at the morning service.

At Christ Church by-the-Sea, Colon, there were services at 5.30, 7 and 10 a. m., children's service and evening prayer at 7.30. The Rev. Edward J. Cooper, the rector, returned from his leave of absence on Thursday, April 4, and was present at all the services. Special music was rendered by a quartet of men at St. Mary's church, Empire, at the 10.45 service. The Rev. Harvey Walter preached.

At St. Luke's Hospital chapel, Ancon, an augmented choir sang portions of Gounod's St. Cecelia Mass. The Rev. Henry A. Brown preached. The congregations in all instances were very large.

Memorial Day Committee Meeting.

A meeting of the Memorial Day Committee will be held in the clubhouse at Gorgona on Sunday, April 14, at 2.30 p. m.

Representatives of the various military and civic organizations on the Isthmus are requested to attend and assist in completing arrangements to hold suitable memorial services on May 30.

W. H. KROMER, *Secretary*.

Reception to Capt. Jack Crawford.

The April camp fire of the American Veterans of Foreign Service will be made the occasion of a reception to Capt. Jack Crawford, the scout. It will be held in the I. C. C. Lodge Hall, Empire, on Saturday, April 13, at 8.30 p. m. All veterans on the Isthmus are invited to be present.

Red Cross Finances.

A financial statement of the Canal Zone Chapter, American National Red Cross, for the months of February and March, follows:

MONTH OF FEBRUARY.

RECEIPTS.

February 1. On hand	$3,077.26	
February 15. Received from Mr. Dickson, account of sale of Christmas Seals	34.15	
February 17. Interest credited at Bank	3.99	
February 29. Membership dues received during the month	4.00	
Total receipts		$3,119.40

DISBURSEMENTS.

February 1. To disbursing officer for supplies as per vouchers attached.	$28.09	
February 13. Relief of destitute family at Empire.	20.00	
February 15. Postage, money orders, etc	8.81	
February 16. To Treasurer, American National Red Cross, 12½ per cent of amount received for sale of Christmas Seals	54.46	
February 19. To Disbursing Officer for printing badges for reception	2.31	
February 28. Relief of Destitute American at Cristobal	25.00	
Total disbursements		$138.67
February 29. Balance on hand		$2,980.73

MONTH OF MARCH.

RECEIPTS.

March 1.. On hand	$2,980.73	
March 14.. Membership dues	5.00	
Total receipts		$2,985.73

DISBURSEMENTS.

March 3.. Postage, as per receipt attached	$2.00	
March 25.. Relief of destitute American at Cristobal	10.00	
Total disbursements		$12.00
March 31.. Balance on hand		$2,973.73

JOHN L. PHILLIPS, *Treasurer*.

Approved:
C. A. DEVOL, *Chairman*.

LOST—Between House No. 66, Empire, and railroad station, a lady's silver mesh bag containing some money and a receipt for an Ancon postal money order. Finder will receive reward by returning the same to Ancon post office.

LOST—On train No. 20, Sunday, April 7, a gold filled watch hunting case, Waltham movement, with fob, in forward first-class coach between Gorgona and Colon. Finder please notify John A. Erickson, Gorgona, C. Z.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule of moving picture entertainments for the week April 15 to 20, is as follows: Culebra, Monday; Gorgona, Tuesday; Corozal, Wednesday; Gatun, Thursday; Cristobal, Friday; Empire, Saturday.

The standing of the teams in the indoor base-ball league on April 6, was as follows:

Team.	Played.	Won.	Lost.	P. C.
Gorgona	5	5	0	1.000
Culebra	6	5	1	.833
Empire	6	3	3	.500
Corozal	5	2	3	.400
Cristobal	6	1	5	.166
Gatun	6	1	5	.166

Games played on April 6, 1912: Empire, 18; Cristobal, 14. Gorgona, 21; Gatun, 6. Culebra, 11; Corozal, 7. Games to be played on April 13, 1912—Cristobal at Culebra; Gatun at Empire; Corozal at Gorgona.

COROZAL.

The tie in the handicap pool tournament was played off last week. Tribolett won the first, Lofgren the second and Logan the third prize. Eight men have signed for the billiard tournament. Entries will close on Friday night. A set of new billiard balls have been ordered from the States.

Ed. Roberts has been appointed manager of the pool room in place of A. H. Roberts, resigned. Arrangements have been made to enter a team from Corozal in the Isthmian Pool and Billiard League. The first games will be played on Saturday night.

CULEBRA.

A Spanish class for ladies has been organized to meet on Tuesday and Friday forenoons from 10.00 to 11.00 o'clock.

The medals for the winning team, in the eight-team local duckpin league, have arrived. The men that were the winners are as follows: Messrs. Cornthwaite, Palmer, Hill, Tragsdorf, Keene, and Silver.

Cristobal will play indoor baseball at Culebra on Saturday evening at 8.15 o'clock.

EMPIRE.

At a meeting of the bowlers held on Thursday, April 4, Mr. Pinney was elected captain of the Empire duckpin tournament team.

The results of the pool and billiard tournament games played at Empire with Cristobal on Saturday, April 16 were as follows: *Pool—Empire*—Hirsh 100, Pearson 100, McCoullough 100, MacKeever 100; *Cristobal*—Ford 56, Burness 90, Montgomery 79, Jacques 80. *Billiards—Empire*—Barnes 100, Wood 100; *Cristobal*—Rice 79, Pack 93.

GORGONA.

The following scores were made in the pool tournament between Gorgona and Gatun on Saturday night, April 6: *Gorgona*—Orr 100, Tougher 65, Hill 52, Ashman 82; *Gatun*—Dalton 91, Gallaway 100, DePoorter 100, Hughes 100.

The following scores were made on Saturday night, April 6, in games of duckpins with Camp Elliott—C. Elliott... 444 436 441 Gorgona.... 417 435 429

A Spanish class for ladies was started on Saturday afternoon. The teacher is J. Gomez, a graduate of the University of Seville. The class will meet every Saturday at 1.30 p. m.

GATUN.

The two advanced Spanish classes for men started a third course of ten lessons on Friday, April 5. Although there is a demand for a class for beginners, Prof. Gomez announces that for the present, on account of the lack of time he will be unable to start any new classes.

Beginning April 9, two afternoons, Tuesdays and Thursdays, will be set aside on which the ladies of Gatun are invited to make use of the privileges of the clubhouse. If there are enough interested, a bowling league will be started among the women.

Mrs. M. E. McLeod played two violin solos at the moving picture entertainment on Thursday, April 4. Mr. Bronson acted as accompanist.

Two games of indoor baseball were played at Gatun on Saturday, April 6. The results were: Cristobal 14, Empire 18; Gorgona 20, Gatun 6. Batteries, Gorgona, Christiansen and Jack; Gatun, Thompson and Atkins.

CRISTOBAL.

The Gatun Choral Club rendered a musical program, appropriate to the Easter season on Saturday evening, April 6.

The Cristobal indoor baseball team plays at Culebra on Saturday night, April 13.

There will be a game of simultaneous checkers on Thursday evening, April 18, when F. L. Bernsee, champion checker player of the Isthmus, will meet all comers from Cristobal and as many from outside as he may choose to invite. The game will begin at 8.15 p. m.

PANAMA CANAL BASEBALL LEAGUE.

RESULT OF GAMES, APRIL 7.

At Empire—Ancon, 15; Empire, 10.
At Colon—Com.-Sub., 6; 10th Infantry, 1.

STANDING OF CLUBS.

	P.	W.	L.	P.C.		P.	W.	L.	P.C.
Com.-Sub.	13	9	4	.692	Empire	13	7	6	.538
Ancon	14	9	5	.642	10th In'ty.	14	3	11	.214

SCHEDULE FOR APRIL 14.

At Ancon—Ancon. vs. Com.-Sub.
At Empire—Empire vs. 10th Infantry.

GAME AT COLON, APRIL 7

C.-S.	AB.	H.	PO.	A.	E.	Infantry.	AB.	H.	PO.	A.	E.
Buch'an,cf.	2	1	0	0	1	Delch'ty,rf.	4	1	0	0	0
Purdue,rf..	2	1	0	0	0	Cassidy,ss.	4	2	0	5	0
Beard,rf...	1	0	0	0	0	Weber,lf...	3	1	1	0	0
Curtis,2-3b	4	1	4	0	0	Trickey,c..	4	0	11	2	0
Mosher,ss,p	2	0	0	4	0	Duff,cf....	3	0	0	0	1
Smith,3b,ss	4	3	1	3	2	Ash,1b....	4	1	9	0	1
Sullivan,lf.	3	0	3	0	0	VanOtt'n,p	2	0	0	2	0
Weiss,1b...	4	1	6	2	1	Lucas,p...	1	1	0	0	0
Sterner,c..	3	1	9	0	0	Saluski,2b.	4	0	3	0	0
Herring,2b.	2	0	4	2	0	Skeris,3b..	4	0	0	3	0
Coffin,p...	0	0	0	1	0						
Totals...	27	8	27	12	4	Totals....	33	6	24	12	2

Com.-Sub	0	1	2	2	1	0	0	0	x—6
Infantry	0	0	1	0	0	0	0	0	0—1

GAME AT EMPIRE, APRIL 7

Ancon.	AB.	H.	PO.	A.	E.	Empire	AB.	H.	PO.	A.	E.
Lindberg,rf	7	0	1	0	0	VanZ'dt,lf.	4	2	4	0	0
Edwards,2b	5	2	3	4	0	Maguire,1b	5	0	15	0	0
Drennan,lf.	3	1	1	0	0	Herring,c..	6	3	2	0	0
Guptil,cf..	4	1	4	0	2	Markley,2b	5	4	3	2	1
Pear'an,3b.	4	3	2	0	1	Garl'ton,rf.	6	2	3	0	0
Potter,ss..	5	3	0	2	0	Toone,3b..	5	1	0	6	0
Nygren,1b.	5	3	6	2	0	Bryan,ss...	4	2	3	1	0
Hodnot,c..	5	2	10	1	0	Marshall,cf	2	0	0	0	1
Murray,p..	3	1	0	0	0	Rielge,cf...	2	2	0	1	0
Russell,p..	0	0	0	0	0	Marshall,p	5	0	0	6	0
Snyder,2b.	2	2	0	0	0						
Totals....	43	18	27	10	3	Totals....	44	16	30*	9	2

Ancon	2	2	3	1	0	0	2	0	0	5—15
Empire	0	0	0	2	0	6	0	2	0	0 10

A baseball game will be played between picked teams from Ancon and Cristobal at Colon Baseball Park, Sunday, April 14 at 3 p. m.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Hotel Tivoli, Ancon, C. Z., Sunday, April 14, 1912, at 8.00 p. m. The program follows:

1. March—*Boys of the Militia*.............Boehlein
2. Selection—*The Prince of Pilsen*...........Luders
3. Mazurka—*La Czarine*...................Ganne
4. Overture—*William Tell* (by request)......Rossini
5. Cornet Solo—*Infammatus from Stabat Mater*................Rossini
6. Polish Dance—*Kuyawiak*............Wieniawski
7. Descriptive—*The Racket at Gilligan's*.....De Witt

   Synopsis—The guests gather at Gilligan's; after their arrival Gilligan sings a song, which is followed by a country dance; the star singer then renders a touching ballad, after which the bagpipes strike up. "Are ye's all ready?" shouts Gilligan. "Yis." "Then fire away." A regular "welt the floor" and "slip time" follows, a sand jig comes next, and the festivities close with all singing "Saint Patrick's Day in the Morning."
8. Medley Selection—*Popular Hits*...........Halle
9. March—*Everybody's Doing It Now*........Berlin

CHAS. E. JENNINGS, *Musical Director*.

The next concert will be given at Cristobal on April 21, at 4.30. p. m.

Misdirected Letters.

ANCON, C. Z., April 10, 1912.

The following insufficiently addressed mail, originating in the United States and its possessions, has been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Ashcroft, R. W.
Bailey, Oliver (2nd Class)
Dierkes, John
Fahey, M. J.
Flint, F. B.
Gibbs, Webb L.
Hall, Mrs. P. A.
Heinrich, Mrs. Amondus
Hobbs, H. C.
Lamont, Mrs. W. S.
Lester, Charles
Lodge, Alfred
Pacheo, Francisco
Powell, T. L.
Rohan, Tom
Rose, Burnes
Smith, Harris C.
Stewart, J. A.
Terreyros, Mrs.
Vaughan, J. J.
Wilson, Mrs. Sarah

The following vessels arrived at or departed from the port of Balboa during the week ending April 6:

Arrivals—March 31, *Peru*, from San Francisco, April 1, *Quito*, from Guayaquil; April 1, *Ucayoli*, from Callao; April 2, *Guatemala*, from Paita; April 6, *Peru* (P. S. N.), from Guayaquil.

Departures—April 1, *Pachitea*, for Callao; April 1, *Newport*, for San Francisco; April 2, *Palena*, to Valparaiso; April 6, *Rupanco*, to Buenaventura; April 6, *Ucayoli*, to Callao.

OFFICIAL CIRCULARS.

Hand Oilers and Oil Containers.

CULEBRA, C. Z., April 2, 1912.

CIRCULAR No. 338-C. (Superseding Circulars Nos. 338, 338-A and 338-B.)

Hereafter the following hand oilers and oil containers only shall be used, and shall be considered as the I. C. C. and P. R. R. standard. Any other hand oilers or oil containers that may be in stock or on order may, however, be used until the supply is exhausted. All replenishment of same shall be in accordance with the following list:

No.	Description.	Capacity.
40.	24-inch Spring Hand Oiler For use on standard gage locomotives only.	2 pints
41.	Locomotive Tallow Pot For use on locomotives, steamshovels, pumps, portable and stationary plants, and at power plants for filling lubricators, etc.	2 quarts
42.	Stationary Engine Oilers For general use around stationary power plants, on air compressors, and marine engines, etc.	2 pints
43.	Standard Squirt Oiler (length of nozzle 4¾ inches, diameter 4 and 3-32 inches) For use on floating equipment, on portable and stationary plants, and on machinery in general.	1 pint
44.	Oil Can with Screw Cover and Spout For use on locomotives and small equipment.	1 gallon
45.	Oil Can with Screw Cover and Spout For use on locomotives and small equipment where one-gallon can is not suitable.	2 gallons
46.	Oil Can with Screw Cover For use on steamshovels and floating equipment.	5 gallons
47.	18-inch Spring Hand Oiler (same type as No 40) For use on dredges, cranes, cableways, steamshovels, narrow-gage locomotives and smaller equipment.	2 pints

All hand oilers and oil containers shall be plainly marked with the I. C. C. and P. R. R. standard number given in above list and with the name of the oil contained. They shall be kept clean and in good repair. They may be specified on requisition either by number or by name.

Requisitions for the above will be honored by storekeepers only after approval by the traveling engineers or inspector of lubricant consumption on equipment other than locomotives.

H. F. HODGES,
Acting Chairman, Isthmian Canal Commission,
Second Vice President, Panama Railroad Company.

Information from Colon Wireless Station.

CULEBRA, C. Z., April 3, 1912.

Circular No. 437:

I am in receipt of the following letter from Major S. D. Butler, U. S. Marine Corps, Commandant, Wireless Stations:

> Owing to the interference caused by the general public in asking the Colon wireless station for information about incoming ships, it is requested that the employes of the Isthmian Canal Commission be directed to ask the Colon telephone exchange for information desired of the wireless station.
>
> The wireless station will keep the telephone exchange constantly informed as to movements of ships. It is further requested that the Colon exchange be directed to comply with such arrangements.
>
> The Colon wireless station has received instructions not to give out any information to the general public, excepting only members of the Canal Commission and the Superintendent of the Panama Railroad.

Major Butler's recommendations are approved, and employes of the Isthmian Canal Commission and of the Panama Railroad Company will govern themselves accordingly.

H. F. HOOGES,
Acting Chairman, Isthmian Canal Commission.
Second Vice President, Panama Railroad Company.

Form for Reduced Rate Requests for Shipments.

CULEBRA, C. Z., April 3, 1912.

CIRCULAR No. 186-D:

Hereafter Form C. E. 339 will be used by employes requesting reduced rate on shipments of household goods and personal effects between the various stations of the Panama Railroad and to New York City.

H. F. HOOGES, *Acting Chairman.*

Acting Chief Clerk, Department of Construction and Engineering.

CULEBRA, C. Z., April 9, 1912.

CIRCULAR No. 438:

Effective April 10, 1912, Mr. Wm. H. May will, in addition to his duties as Secretary to the Chairman, assume the duties of the Chief Clerk during the absence on leave of Mr. C. A. McIlvaine.

GEO. W. GOETHALS, *Chairman.*

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending April 6:

Turrialba, March 30, from New York, with 396 pieces yellow pine lumber, for Mechanical Division; 122 cases copper bars, for Pacific Division; 12 cases zinc plates, for stock.

Navajo, March 30, from San Francisco, with 750 cases blasting powder, 849 bales hay, for stock; 157 pieces redwood, for Mechanical Divison.

Cristobal, March 31, from New York, with 120,210 bags cement, for Atlantic and Pacific Divisions; 36 pieces locomotive tires, for Mechanical Division; 12 barrels creosoting oil, 10 cases belt dressing, 16 kegs rivets, 8 cases mining machinery, for stock.

Joseph J. Cuneo, March 31, from Bridgetown, with 15,000 cases dynamite, for stock.

Prinz August Wilhelm, April 1, from New York, with 10 reels wire, for Atlantic Division; 15 kegs nails, for Mechanical Division; 393 pieces lumber, for Panama Railroad Company; 203 cases window glass, 55 kegs nuts, 520 kegs nails, 850 pieces steel bars, 50 bundles steel bars, for stock.

Panama, April 1, from New York, with 6 crates stoves, 17 reels copper wire, 29 cases lock material, for Atlantic Division; 21 cases lock material, 5 cases pumps and motors, 25 cases rubber boots, 14 kegs bolts, 13 cases bolts, 13 cases lock castings, for Pacific Division; 1,000 bundles bolts, 118 crates silica bricks, 11 cases fire brick tile, for Mechanical Division; 5 pieces dredge buckets, for Division of Fortifications; 25 cases drugs and sundries, for Sanitary Department; 50 cases paper napkins, 15 cases range parts, 50 crates ranges, 25 crates paste, 30 cases wrenches, 15 bundles straw boards, 20 crates emery cloth, 8 barrels sulphate copper, 10 cases belt dressing, 500 cases garbage cans, 60 pieces pipe and fitting, 40 kegs wire nails, 28 bundles toe calks, 15 cases insulated wire, 600 rolls roofing paper, 59 crates galvanized buckets, 42 cases ink, 25 cases metal polish, 20 bales packing, 10 bundles shovels, for stock; 105 pieces snubbing posts, for Atlantic Division; and a miscellaneous cargo, the whole consisting of 3,245 packages, weighing 365 tons.

Lewis Luckenbach, April 3, from New York, with 116,352 bags cement for Atlantic and Pacific Divisions.

Metapan, April 4, from New York, with 7,200 pieces tiling, for Panama Railroad Company; 15 pieces castings, for Atlantic Division; 17 packages hardware, 12 cases gaskets, 21 cases tape fuse, 6 cases insulated tape, for stock.

Atenas, April 4, from New Orleans, with 92 cases sledge handles, 71 packages hand cars, 8 cases cotter pins, 6 crates water closets, 1,071 pieces lumber, 112 pieces piling, for stock; 2,698 pieces lumber, for Mechanical Division; 418 pieces lumber, for Atlantic Division; 142 barrels brick, for Panama Railroad Company.

Tivives, April 6, from New York, with 75 cases copper bars, for Pacific Division; 18,800 pieces tiling, for Panama Railroad Company; 20 crates pipe, 132 pieces lumber, for stock.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, April 6, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., Mar. 31..	124.8	91.2	43.8	18.0	17.8
Mon., Apr. 1...	124.8	91.2	43.8	18.0	17.9
Tues., Apr. 2...	124.8	91.2	43.8	18.0	17.9
Wed., Apr. 3...	124.8	91.2	43.8	18.0	17.9
Thurs., Apr. 4..	124.7	91.1	43.8	17.9	17.8
Fri., Apr. 5....	124.7	91.1	43.7	17.9	17.7
Sat., Apr. 6....	124.7	91.1	43.7	17.8	17.7
Height of low water to the nearest foot..	125.0	91.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending April 17, 1912 (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
April 11........	......	4.52	11.10	5.33	11.38
			P.M.		
April 12........	......	5.58	12.20	6.40	......
April 13........	12.47	6.56	1.14	7.30	......
April 14........	1.38	7.44	1.55	8.11	......
April 15........	2.19	8.25	2.33	8.50	......
April 16........	2.55	9.05	3.08	9.28	......
April 17........	3.31	9.42	3.45	10.05	......

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL

Colon	P. R. R.	Monday	April	8
Advance	P. R. R.	Saturday	April	13
Panama	P. R. R.	Saturday	April	20
Allianca	P. R. R.	Friday	April	26
Colon	P. R. R.	Thursday	May	2
Advance	P. R. R.	Thursday	May	9
Panama	P. R. R.	Wednesday	May	15
Allianca	P. R. R.	Tuesday	May	21
Colon	P. R. R.	Monday	May	27
Advance	P. R. R.	Monday	June	3

CRISTOBAL TO NEW YORK.

Allianca	P. R. R.	Sunday	April	14
Colon	P. R. R.	Saturday	April	20
Advance	P. R. R.	Friday	April	26
Panama	P. R. R.	Friday	May	3
Allianca	P. R. R.	Thursday	May	0
Colon	P. R. R.	Wednesday	May	15
Advance	P. R. R.	Tuesday	May	21
Panama	P. R. R.	Monday	May	27

NEW YORK TO COLON.

Zacapa	U. F. C.	Wednesday	April	3
Prinz Joachim	H.-A.	Saturday	April	6
Sixaola	U. F. C.	Saturday	April	6
Almirante	U. F. C.	Wednesday	April	10
Prinz Sigismund	H.-A.	Saturday	April	13
Trent	R. M.	Saturday	April	13
Carrillo	U. F. C.	Saturday	April	13
Santa Marta	U. F. C.	Wednesday	April	17
Turrialba	U. F. C.	Saturday	April	20
Prinz August Wilhelm	H.-A.	Saturday	April	20
Metapan	U. F. C.	Wednesday	April	24
Arcadian	R. M.	Saturday	April	27
Prinz Eitel Friedrich	H.-A.	Saturday	April	27
Tivives	U. F. C.	Saturday	April	27
Zacapa	U. F. C.	Wednesday	May	1
Sixaola	U. F. C.	Saturday	May	4
Prinz Joachim	H.-A.	Saturday	May	4
Almirante	U. F. C.	Wednesday	May	8
Tagus	R. M.	Saturday	May	11
Prinz Sigismund	H.-A.	Saturday	May	11
Carillo	U. F. C.	Saturday	May	11
Santa Marta	U. F. C.	Wednesday	May	15
Prinz August Wilhelm	H.-A.	Saturday	May	18
Turrialba	U. F. C.	Saturday	May	18
Oruba	R. M.	Saturday	May	25
Prinz Eitel Friedrich	H.-A.	Saturday	May	25

COLON TO NEW YORK.

Metapan	U. F. C.	Thursday	April	11
Prinz Eitel Friedrich	H.-A.	Monday	April	15
Victoria Luise	H.-A.	Monday	April	15
Oruba	R. M.	Tuesday	April	16
Tivives	U. F. C.	Tuesday	April	16
Zacapa	U. F. C.	Thursday	April	18
Prinz Joachim	H.-A.	Tuesday	April	23
Sixaola	U. F. C.	Tuesday	April	23
Almirante	U. F. C.	Thursday	April	25
Prinz Sigismund	H.-A.	Monday	April	29
Tagus	R. M.	Tuesday	April	30
Carrillo	U. F. C.	Tuesday	April	30
Santa Marta	U. F. C.	Thursday	May	2
Turrialba	U. F. C.	Tuesday	May	7
Prinz August Wilhelm	H.-A.	Tuesday	May	7
Metapan	U. F. C.	Thursday	May	9
Prinz Eitel Friedrich	H.-A.	Monday	May	13
Orotava	R. M.	Tuesday	May	14
Tivives	U. F. C.	Tuesday	May	14
Zacapa	U. F. C.	Thursday	May	16
Prinz Joachim	H.-A.	Tuesday	May	21
Prinz Sigismund	H.-A.	Monday	May	27
Thames	R. M.	Tuesday	May	28

NEW ORLEANS TO COLON.

Parismina	U. F. C.	Saturday	April	6
Cartago	U. F. C.	Wednesday	April	10
Abangarez	U. F. C.	Saturday	April	13
Heredia	U. F. C.	Wednesday	April	17
Atenas	U. F. C.	Saturday	April	20
Orleanian	U. F. C.	Wednesday	April	24
Parismina	U. F. C.	Saturday	April	27
Cartago	U. F. C.	Wednesday	May	1
Abangarez	U. F. C.	Saturday	May	4

COLON TO NEW ORLEANS

Atenas	U. F. C.	Thursday	April	11
Orleanian	U. F. C.	Thursday	April	11
Parismina	U. F. C.	Thursday	April	18
Cartago	U. F. C.	Thursday	April	18
Abangarez	U. F. C.	Thursday	April	25
Heredia	U. F. C.	Thursday	April	25
Atenas	U. F. C.	Thursday	May	2
Orleanian	U. F. C.	Thursday	May	2

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, APRIL 17, 1912. No. 34.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of March is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Operations in Collecting Scrap.

Following the receipt of two locomotive cranes, which are being assembled on the track through the yard at Dock No. 14, Cristobal, the sorting and loading of the French scrap will be expedited, to make room for the greater amount of material which will be sent to the yard as the result of extended operations along the line of the Panama railroad. Forces of men are now gathering the scrap at Gorgona, San Pablo, Empire and Paraiso, and near Bohio a force has started to dismantle the big ladder dredges abandoned there, which were the largest pieces of equipment which the French canal construction company used.

Two wooden scows, of 30-tons capacity each, are building at Gatun for hauling material out of the lake district. A considerable quantity is in reach now, at Bohio, Frijoles (on the old line of the Panama railroad), Tabernilla and Vamos-vamos, bordering the old French channel. The scows will be towed by a gasoline launch, 35 feet long and of 9-foot beam, equipped with a 35-horsepower engine.

Records for 70- and 45-Ton Shovels.

Steamshovel No. 120 (T. P. Kelleher, engineer, and L. P. Bonnell, craneman), working in the west borrow pit for Gatun Dam, loaded on April 2nd 195 large dump cars containing a total of 3,315 cubic yards of material, in the working day of eight hours.

This is the highest daily output for a 70-ton shovel since the commencement of operations by the Commission. The previous highest daily output was 2,900 cubic yards, made by steamshovel No. 124 on March 14, 1912. The crew now working on steamshovel No. 120 and making the above record have also the daily record for a 45-ton shovel. On December 6, 1910, with steamshovel No. 51, they loaded 2,448 cubic yards at Gatun Spillway. For the month of March the place measurement for Shovel No. 120 exceeded the car measurement by 7 per cent.

March Borrow Pit Excavation for Gatun Dam.

The six steamshovels (five 70-ton and one 91-ton), working in borrow pits for the Gatun Dam, excavated a total of 271,715 cubic yards, place measurement, in 147 shovel days, or an average of 1,848 cubic yards a day per shovel.

Four of these shovels worked in the west borrow pit and one in the red clay borrow pit the entire month of 26 working days. The sixth shovel worked 17 days, from March 12 to 30, inclusive, in the New Gatun hard rock storage dump.

The following table classifies the material excavated and indicates the yardage of each shovel by place measurement:

Steamshovel.	Earth.	Rock.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
116	4,545	40,907	45,452
117	10,014	26,402	36,416
120	14,163	37,337	51,500
132	49,794	2,621	52,415
134	13,142	13,200	26,342
257	8,939	50,651	59,590
	100,597	171,118	271,715

For the month of March, the place measurement exceeded the car measurement by over 2⅓ per cent.

Upper Approach Wall at Miraflores Locks.

The placing of concrete for the superstructure of the cellular approach wall at the upper, or north end of Miraflores Locks was begun on April 15, when two portable mixers began supplying material to the forms for the lateral and longitudinal girders which will support the solid portion, 39 feet 9 inches in length, at the outer end. This part of the wall is to be supported on three transverse girders, 59 feet long by 3 feet 10 inches wide by 7 feet high, resting on 14 piers of solid concrete, 7½ feet in diameter and based on solid rock. The first and third of these girders, counting from the outer end, will each contain 6,780 pounds of high carbon reinforcing steel in the shape of deformed rectangular bars from ⅞ to 1¼ inches in diameter, and the second or center girder under the solid part will contain 7,160 pounds. The ordinary cross girders, on which will rest the counterforts at intervals of 15 feet, are to contain 6,150 pounds of steel. These have the same length and depth but are 3 feet thick.

The structure of this wall, described in THE CANAL RECORD of October 18, 1911, is essentially the same as that of the upper approach wall at Pedro Miguel, with the exception that the latter rests directly on rock, without the use of piers or girders. Not all of the piers have been sunk and filled on account of railroad tracks across the site of the wall but the removal of the tracks and the placing of the remaining caissons will be carried on simultaneously with the construction of the superstructure.

Record for Culebra Cut Excavation.

On Thursday, April 11th, 44 steamshovels working in the Pedro Miguel, Culebra and Empire Districts of the Central Division excavated 68,505 cubic yards of material, car measurement, during the working day of eight hours. This is the highest daily record of excavation in the Culebra Cut proper.

Progress in Erection of Lock Gates.

The west leaf of the upper guard gate in the east chamber of the upper level at Gatun Lock was hung in its final position on April 15. The operation consisted of moving the leaf horizontally 4 feet and lowering it about 8 inches from the foundation on which it had been erected, until a hemispherical cavity in the heel of the leaf fit over the pintle, which is a corresponding solid hemisphere of nickel steel, 16 inches in diameter, set in the floor of the chamber at the base of the wall. At the top of the gate a pin, 10 inches in diameter, engages a yoke casting, with its bearings anchored in the concrete wall, completing the hinge. The leaf swings about 9 inches above the floor of the lock and the sill against which the bottoms of the leaves will rest when the gate is closed rises 4 feet above the floor. Each of the upper guard gate leaves is 54 feet 8 inches high.

When hung the leaves are swung back against the wall, fitting in a recess so made that when the gate is open the outer sides of the leaves are one foot back of the faces of the walls, between which is a clearance of 110 feet. The hanging is practically the end of the contractor's work, as the installation and adjustment of the machinery for closing and opening the gates is to be done by the First Division of the Chief Engineer's Office. The first set of machinery for the operation of gates was completed on January 13, 1912, except the strut connection, which should not be installed until the gate is completed. The second set of machinery has been shipped and will be installed and tested on the other leaf of the upper guard gate.

A new double-span bridge, for simultaneous operations in erecting corresponding gates in the two chambers, has been erected over the site of the intermediate gates of the lower lock at Gatun and the erection of the skeletons for these gates will begin at once. The other, or original, bridge in use at Gatun Locks is over the site of the safety gates at the lower end of the upper lock, the skeletons for which are now about one-third completed. In the erection of the intermediate gates for this level, the completion of the skeleton and the

NOTES OF PROGRESS

(Continued.)

moving of the bridge to the lower safety gates occupied 54 working days.

At Pedro Miguel, where the second bridge, with accessory equipment, has been in use since the middle of December, one bridge has just been moved from the site of the lower safety gates, the skeletons for which are completed, to the site of the lower main gates. The only gates not under way at Pedro Miguel are the intermediate gates, to which the bridge will be moved from the upper main gates within a few weeks, and the lower guard gate in the west lock. No work will be done at Miraflores until all erection, with the exception of the riveting, has been completed at Pedro Miguel.

The force of the McClintic-Marshall Company on the Canal work numbers now approximately 1,000 men, evenly divided between the two Divisions.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 86 per cent completed, 195,413 cubic yards, out of a total of 225,000, having been placed at the close of work on April 13. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
April 8	64	3.30	1
April 9	188	8.00	2
April 10	180	8.00	2
April 11	172	7.30	1
April 12	148	7.00	1
April 13	124	7.00	2
Total	876	41.00	1.5
Previously reported	194,537		
Grand total	195,413		

Ancon Crusher

A statement of the rock crushed at Ancon quarry during the week ending April 13, follows:

DATE.	Hours worked.	Cubic Yards.
April 8	6.25	2,458
April 9	7.00	2,835
April 10	7.40	2,872
April 11	8.05	2,696
April 12	5.50	2,443
April 13	6.05	2,728
Total	40.05	16,032

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending April 13, follows:

DATE.	Hours worked.	Cubic Yards.
April 8	3.45	1,880
April 9	4.00	1,504
April 10	3.15	1,330
April 11	4.25	1,930
April 12	3.40	1,872
April 13	3.05	1,886
Total	22.10	10,402

Erection of Dynamite Wharf at Mindi.

All of the foundation piles for the dynamite wharf at Mindi have been driven and the superstructure is to be completed within the next ten days. The piles are arranged in rectangular rows, spacing 8 feet each way and those next the channel were driven by floating piledriver *No. 1*, the others, beyond the reach of this equipment, being forced down with a swinging hammer. Extending over each row of piles is a 12-inch by 12-inch cap, and the flooring, 3 inches thick, will rest on the stringers, 3 by 12 inches, which in turn will rest on the caps.

The quarantine report for the port of Colon during the month of March shows the number of persons admitted to the Isthmus "in transit" as 3,836, practically all of whom are tourists.

PERSONAL.

Maj. Robert E. Noble is a passenger on the United Fruit Company ship from New Orleans scheduled to arrive at Colon on April 18.

CONCRETE WORK IN THE LOCKS

Over 83 per cent of the concrete for the locks is in place, the amount at the close of work on April 13 being 3,527,062½ cubic yards, out of a total of approximately 4,199,400. A total of 26,990 cubic yards of concrete was laid in the locks during the week ending April 13.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on April 13 being 1,860,768½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending April 13, and of the total, follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 8	418	6.46	2	....	....	.....	....	450
April 9	628	13.52	4	....	....	.....	....	661½
April 10	280	4.28	3	....	....	.....	....	309
April 11	428	7.00	4	....	....	.....	....	479
April 12	634	16.23	3	....	....	.....	....	678½
April 13	658	10.56	5	....	....	.....	....	730
*Portable mixers	....	....	.....	262	....	.....	....	....
Total	3,046	59.25	3.5	262	....	.....	....	3,308
Previously reported	....	....	.....	....	....	.....	....	1,857,460½
Grand total	....	....	.....	....	....	.....	....	1,860,768½

The 262 yards shown for the two portable mixers are reinforced concrete, and were placed on the following days: April 8th, 32; April 9th, 33½; April 10th, 29; April 11th, 51, April 12th, 44½; April 13th, 72.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 99 per cent completed, 832,115 cubic yards, out of a total of 837,400, bucket measurement, having been placed at the close of work on April 13. The record for each of the six 8-hour working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 8	156	4.00	1	220	21.50	5	....	376
April 9	188	4.75	1	140	17.50	4	....	328
April 10	196	5.00	1	232	17.50	4	....	428
April 11	126	3.50	1	152	14.00	4	....	278
April 12	186	4.75	1	101	14.50	3	....	287
April 13	174	4.25	1	162	18.00	4	....	336
Total	1,026	26.25	1	1,007	103.00	4	....	2,033
Previously reported	....	....	.....	....	....	.....	4,423	830,082
Grand total	....	....	.....	....	....	.....	4,423	832,115

MIRAFLORES LOCKS.

Over 61 per cent of the concrete for the system of two twin locks at Miraflores was in place on April 13, the total amount on that date being 834,179 cubic yards, bucket measurement, out of a total of approximately 1,362,000. The record for each of the six 8-hour working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 8	1,736	40.67	6	1,150	18.00	2	618	54.50	9	....	3,504
April 9	1,198	51.00	8	1,144	14.83	2	663	51.00	8	....	3,005
April 10	1,854	54.83	8	1,288	19.33	2	659	54.00	8	....	3,801
April 11	2,084	54.50	8	1,356	19.50	2	672	55.75	8	....	4,112
April 12	2,146	56.83	8	1,012	15.58	2	606	52.50	8	....	3,764
April 13	1,874	48.84	8	1,184	17.50	2	405	46.50	6	....	3,463
Total	10,892	306.67	7.67	7,134	104.74	2	3,623	314.25	7.83	....	21,649
Previously reported	....	....	.....	....	....	.....	....	....	.....	3,693	812,530
Grand total	....	....	.....	....	....	.....	....	....	.....	3,693	834,179

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The Gatun Woman's Club held an election of officers at the meeting on Thursday, April 11, when the following were chosen: President, Mrs. E. G. Neville; vice president, Mrs. A. F. Gabler; secretary, Mrs. W. J. Allen; treasurer, Mrs. J. B. Hanna. Capt. Jack Crawford entertained the members with an informal reading of several of his poems. The Gatun Woman's Club was organized on October 4, 1907, with Mrs. Chester Harding as president. Its activities have been mainly civic and social. Programs of varied interest have been carried out at the meetings during each year, and several entertainments have been given at the clubhouse. In 1909, the club organized and maintained a kindergarten, and the following year, it took the initiative steps in raising the money for the establishment of a public playground. It has arranged and carried out Christmas treats for the children of the Spanish laborers in New Gatun.

The Pedro Miguel Club held a card party at the social hall in that village on the night of April 6 to mark the occasion of the club's disbanding. This was the third of the women's clubs to be organized on the Canal Zone, the date being October 2, 1907. In 1908 a library was started. In 1910 the club joined with the Paraiso club in entertaining the president and second vice president of the General Federation, and in 1911 these two clubs entertained the Canal Zone Federation at the mid-winter meeting at the Hotel Tivoli. In 1911 the club withdrew from the Federation, and became a card club.

International Brotherhood of Steam Shovel and Dredge Men.

Local No. 19, I. B. of S. S. & D. M., will hold its regular meeting on Sunday, April 21, at 12.15 p. m. in Empire lodge hall. All members are requested to attend as business of importance is to be transacted.

Civil Service Board.

Hereafter all mail for the Isthmian Civil Service Board should be addressed as follows: Isthmian Civil Service Board, Culebra, Canal Zone.

In communications by telephone the Chairman's office should be requested from Empire exchange and the branch exchange operator in the Chairman's office should be asked to make connection with the Civil Service Board.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on April 24. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m., on April 24, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

The ladder dredge *Corozal*, which arrived at Balboa from Scotland on March 27, began work in the Pacific entrance on April 15.

CANAL WORK IN MARCH.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z. April 15, 1912.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of March, 1912:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	254	1,712,225	149 079	1,861,558
Work excavation, wet	Cubic yards	428,626	....	404,939	833,565
Total work excavation	Cubic yards	428,880	1,712,225	554,018	2,695,123
Plant excavation, dry	Cubic yards	....	24,552	....	24,552
Plant excavation, wet	Cubic yards	....	....	83,340	83,340
Total Plant excavation	Cubic yards	....	24,552	83 340	107,892
Total Canal Excavation	Cubic yards	428,880	1,736,777	637,358	2 803,015
Material placed in dams	Cubic yards	471,933	....	110,822	582,755
Concrete placed in locks and dams	Cubic yards	35 338	....	93,037	128,375
Explosives used	Tons (Gross)	154.99	238.91	34.15	428.05
Rock drilled	Feet	33,362	459,351	64,847	557,560
Tracks removed	Miles	....	15.73	....	15.73
New tracks laid	Miles	2.65	21.50	4 48	28.63
Rock crushed	Cubic yards	47 282	....	98,500	145,782
Cement used	Barrels	45,201	80	95,125	140,406
New roads built	Miles	0.19	....	....	0.19
Water mains laid	Feet	23,689	2,663	15,879	42,231
Sewers laid	Feet	985	....	....	986
Open drains and ditches dug	Feet	24,086	56,876	9,226	90,188
Average daily force	....	6 595	8,352	6,206	21,153
Average rainfall	Inches	0 61	0.05	0.01	0.15

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the Division Engineers, the inspection being cared for by this subdivision. Work was continued on the grinding of fixed irons and preparing the valve chambers for the installation of the valves, which work is being done under supervision of this office. This subdivision is also charged with general inspection of the masonry work of all the locks.

LOCK GATES AND PROTECTIVE DEVICES.

Shop Work in the United States—Up to March 20, a total of 49,030 tons of structural steel had been accepted at the rolling mills, or about 95 per cent of the total, of which 2,098 tons were accepted between February 20 and March 20; and a total of 28,923 tons of riveted structural material was shipped from the Rankin shops, or about 56 per cent of the total contract weight. Of this last item, 2,172 tons were shipped between February 20 and March 20. In addition to these quantities, a total of 1,054 tons of riveted work was shipped to replace in part the 1,419 tons lost on the steamship *Moldegaard.* On March 20, about 3,000 tons of riveted material remained in the yard at Rankin ready for shipment.

The following are details of material shipped up to March 20, 1912:

Gatun Locks—Practically all material for the 20 leaves in the upper chambers was shipped; also about two-thirds of the material in the intermediate gates, and one-third in the lower guard gates of the lower chamber. About 20 per cent of the gates in the intermediate lock was also shipped. As the gates in the upper and lower chambers are identical, it is proposed to use, for erection in the lower chamber, a part of the material originally intended for the upper lock.

Pedro Miguel Locks—Practically all of the material for the gates in these locks was shipped.

Miraflores Locks—Practically none of the material for the gates in these locks was shipped.

The shipment of miscellaneous parts, castings, handrailings, piping, etc., proceeded satisfactorily.

LOCK GATE ERECTION.

Gatun—Upper guard gates, 54 feet 8 inches high, leaves Nos. 37 to 40, inclusive: The work on these gates during the month consisted mainly in fitting and securing the end reaction castings at the ends and the jaw plates at the top of the gates, also in hanging some of the manhole covers. At the end of the month the reaction castings and the wedge fillers between them and the skin plates were adjusted and bolted up on the quoin ends of leaves Nos. 37 and 38. The rivets through the castings, the wedges and other rivets adjacent thereto were riveted up in 11 vertical panels out of 13 in leaf 38, and one panel in leaf 37. On leaves 39 and 40, the castings were attached to the quoin ends and were being adjusted. At the miter ends of leaves 37 and 38, the end plates were ground off for attaching the castings. In leaves 39 and 40, this work was still in progress.

Upper gates, upper lock, 77 feet high, leaves 33 to 36, inclusive: During the month the work consisted in bolting, reaming and riveting the sheathing plates. About five-sixths of the reaming was completed. but only one-quarter of the riveting was done.

Middle gates, upper lock, 77 feet high, leaves 29 to 32, inclusive: All material was in place, except footwalks, etc., and castings. The skeleton was practically riveted up, but not the sheathing plates. The bridges in the upper lock were moved March 26 into position for erecting the safety gates, and the erection of a new set of bridges was started in the lower lock.

Pedro Miguel—Upper guard gates, 54 feet 8 inches high, leaves 50 to 53, inclusive: The end plates, etc., on these leaves were riveted during the month; very little other riveting was done. The riveting was about three-quarters completed, considering the four leaves as a whole. A small part of the end plates at the quoin ends of two of the leaves were ground for the reception of the reaction castings. Two sheathing plates were still missing. but the remainder of the material was in place, except for the footwalks, various fittings, and the castings.

Upper gates, 79 feet high, leaves 54 to 57, inclusive: The skeleton for these leaves was erected before March 1. Since then very little work was done on thm. No sheathing plates were attached, but a part of the bent end plates were erected and riveted. About one-third of the holes for the rivets connecting the girders to the vertical frames were reamed out and a small part of these rivets driven.

Safety gates, 79 feet high, leaves 62 to 65. inclusive: The skeleton in these four leaves was practically erected prior to March 1, since which time about one-half the sheathing plates were attached, but none of the rivet holes in them were reamed out or rivets driven. The rivet holes connecting the skeleton to the vertical framing were practically all reamed and about three-fourths of the rivets driven.

The total tonnage of the lock gates erected on the Canal to April 1, 1912, without regard to its being fully riveted, was about 11,216 tons, out of a total of 58,000 tons, or about 20 per cent. Of this, 1,384 tons, or 2½ per cent, was erected during the month. The total number of field rivets driven was 533,172, or 9.3 per cent of the total, of which 107,439 or 1.9 per cent were driven during the month of March.

The tonnage erected was much less than during February. This reduction was due, in part, to the fact that during the month plates were mainly erected, while in February the heavier girders were put in place. The main reason for the slow progress made, however, was the fact that at Pedro Miguel the compressor plant could not furnish sufficient air for reaming and riveting on more than four leaves at any one time; hence, some of them remained practically at a standstill. The air plant at both Pedro Miguel and Gatun is being doubled in size, almost all of the extra plant having been placed, although some important parts had not yet arrived. Arrangements were also made to use the large electric reamers at Pedro Miguel.

LOCK GATE RECESS COVERS.

The material for all recess covers (80 in all) excepting the castings was shipped from the works at Trenton, N. J., and 56 of them were received on the Isthmus. Eighteen covers were put in place over the recesses at Gatun, of which 16 were riveted up and 8 fully aligned and grouted in. At Pedro Miguel, 12 were put in place and 11 riveted up, but none adjusted for alignment.

CHAIN FENDERS.

All shop drawings, including piping plans, were approved. Up to March 20, about 28 tons of structural material was inspected and released for shipment to the American Bridge Company. No shipments were made to the Isthmus. The test of the resistance valve will not be started until April 15, on account of the difficulties the contractors have experienced in getting steel castings for flanges, etc.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection as follows:

(1) *For the rising stem and cylindrical valve machines, purchased under Circular 614*—The two trial rising stem gate valve machines are now on the Isthmus, and the installation was nearly completed. They were practically ready for test preliminary to connecting valve stem to cross-head. These tests will be made during the month of April, and the machines will probably be erected complete with roller train and gate ready for complete test of valve. The parts of rising stem gate valve machines lost on the steamship *Moldegaard* were shipped during the month. Foundation bolts were being delivered for the 114 rising stem gate valve machines; also bulkhead bed plates. Castings and parts for these machines were being produced satisfactorily, and the work progressed rapidly.

Cylindrical valve machine No. 540, complete, except foundation material, previously shipped, was received during the month. and will replace the valve machine lost in the wreck of the steamship *Moldegaard*. Factory tests of cylindrical valve machine No. 559 were satisfactory, and machine was shipped. When received, this will be the first machine to apply on order for 118 cylindrical valve machines. Foundation material for the cylindrical valve machines was completed. Two more of these machines were erected at the works of the contractor the latter part of the month, and will undergo tests at once.

Foundation bolts and washers for the two 36-inch auxiliary culvert valve machines and two 60-inch auxiliary culvert valve machines were received during the month.

The insulation test of motors which was conducted on the Isthmus was concluded during the month, and on March 18 the General Purchasing Officer was authorized to make award to the General Electric Company for Items 2, Classes 3 and 4 (first alternative), 232 motors, at a total cost of $117,281. In addition to Class 4, Item 2, was added 12 motors for auxiliary culvert valve machines, at a total cost of $4,380. All motors are to be delivered complete by April 1, 1913.

On March 18, the General Purchasing Officer was authorized to make award to the Cutler-Hammer Mfg. Co., for Items 2 and 4, Class 5 of this circular, 232 limit switches, at a total cost of $11,368.

(2) *For the rack railway and other material purchased under Circulars 619, 635, 636-D, 647, 666, and 688*—Out of the 58 items under these contracts, 18 were 90 per cent or more completed. The work progressed satisfactorily.

(3) *For the gate operating machines, Class 1, and miter forcing machines, Class 2, purchased under Circular 627*—No work was done on the installation of these machines, the same being held up owing to the work on any miter gates not being completed. The second miter gate moving machine, No. 37, and ratchet, was shipped from the United States on March 14. On February 9, award was made to the Wheeling Mold and Foundry Company for 90 miter gate moving machines, to be delivered complete by April 1, 1913.

The shipment of the two motors for the sample miter gate moving machines was delayed on account of defect in two gears.

Casting operations were in progress, and completed approved drawings were received from the contractor covering the 90 miter gate moving machines.

(4) *For the gate and girder hoisting machinery for the emergency dams, purchased under Circular 616*—Satisfactory progress was made on this machinery during the month.

(5) *For the Gatun hydro-electric station, purchased under Circular 648*—The status remains the same as reported last month. Work progressed satisfactorily on various items of the three classes under this circular.

(6) *For electric towing locomotives, purchased under Circular 650*—Working drawings were being prepared for Class 1, Item 1, one trial locomotive, at the works of the contractor. Award was not made for the remaining 39 locomotives.

(7) *For locomotive cranes, derricks and hoisting engines for erection plant of machinery and electrical equipment, purchased under Circular 662*—Two 15-ton locomotive cranes were received on the Isthmus on February 3 and two more were received on March 9, leaving four of these cranes to be delivered. All cranes are to be delivered complete on or before April 25, 1912.

The following is a summary on the work accomplished in the field by the erecting forces:

ATLANTIC DIVISION LOCKS.

The force installing machinery and electrical equipment on the Isthmus assembled 1,320 feet of towing track, including the assembly of rack sections, channels, anchor bolts, "T" rails, and bonding of same. (This does not include installation of conductor rails, conductor slot covers and brackets.) A total of 1,908 feet of towing track were assembled to date; 216 feet of track were "frozen" in place, making a total of 420 feet to date. A test truck having the essentials similar to the truck of the locomotive was completed and a test of the rack sections installed will be made with the same. The lining of movable seals and fixed irons on the rising stem valve chambers, Nos. 256, 257, 260 and 261 was carried forward, and similar work was commenced on the intake valves.

During the month 278.7 cubic yards of concrete were placed; 191.8 for locomotive track, and the remainder, 86.9, in decking of valves Nos. 260 and 261 and miscellaneous places.

Temporary light standards, consisting of piling, were installed on the middle and side walls at Gatun for the purpose of studying the requirements for lock illumination and the testing of reflectors of regular and special types.

PACIFIC DIVISION LOCKS.

Most of the work in the Pacific Division Locks was of a preparatory nature. Some miter gate recess covers were installed, which permitted the towing locomotive track construction to commence.

EMERGENCY DAMS.

The inspection work in the United States progressed satisfactorily during the month. Up to March 20 a total of 753 drawings, large and small, covering turning and wedging machinery, structural material, etc., were completed and approved. The general condition of the work was as follows:

At the Ambridge plant of the American Bridge Company, for the first dam, 12 wicket girders and the horizontal truss were completed. The vertical trusses for the first dam were 75 per cent punched, 25 per cent assembled, 15 per cent riveted, and 5 per cent finished. For the second dam, one horizontal truss was completed; 12 wicket girders were 50 per cent punched, 25 per cent assembled, and 15 per cent riveted; none were finished. Both vertical trusses for the second dam were

75 per cent punched, 25 per cent assembled, 15 per cent riveted, and 5 per cent finished.

At the Pencoyd plant of the American Bridge Company, all the structural steel for the gates of the first two dams was completely punched and 75 per cent painted, and the other 25 per cent was being sand-blasted preparatory to painting. Eighty-five per cent of the wheel castings for four dams was machined and was ready for assembling. All axles for the four dams were ground and ready to be forced into the wheels. Four manganese bronze discs were received and one completely machined. All castings for the turning and wedging machinery were 97 per cent completed for two dams, and 75 per cent completed for the third and fourth dams. Rack and track segments and all forgings for the first two dams were completed.

Up to the 20th of March, no material under this contract was shipped from the United States.

An inspector was sent from the United States to investigate the general conditions at the emergency dam sites and to do all field work necessary before erection begins. Contractors' engineers who will have charge of the erection were also on the ground awaiting the first shipment of material, which is expected to arrive the early part of April.

AIDS TO NAVIGATION.

Surveys—Levels were taken at all gas buoys from Mamei, P. I., to Bas Obispo, P. I., the center line of Range No. 1-2, Gatun Lake Section, was prolonged and the front tower located in the south middle approach wall. All gas buoy locations from Gatun to Mamei were checked. The latitude and longitude of the towers forming Range 5-6, Atlantic Division, and Range 13-14, Pacific Division, were determined. Field notes were being plotted.

Construction—Pacific Division. Range 9-11. Same status as when last reported.

Pacific Division. Range 1-2. The door and windows were hung, and the brass lantern frame and curved glass were placed in rear tower. Otherwise, status of range is same as reported last month.

Pacific Division. Range 13-14. All windows and doors of towers in place, and the brass lantern frames and curved glass were placed in both towers.

Atlantic Division. Range 5-6. The spiral reinforced concrete stairway of the rear tower was completed, and the hanging of the door and windows commenced. The concrete newel post in the front tower was carried up to its full height of 53 feet, and the entrance stairs and vestibule were completed. Drain tile was laid around the footing of the tower.

Gatun Lake Section. Range 21-22. Same status as when last reported.

Gatun Lake Section. Range 24-25. Front Tower. The walls were carried up to their final height of 28 feet 10 inches to focal plane, and the entrance steps and vestibule were completed. *Rear Tower.* The concrete walls were carried up the final height of 26 feet [illegible] inches to focal plane.

Gatun Lake Section. Range 1-2. Front Tower. Two reinforced beams, 8 feet deep and 38 feet span, were built in the south middle approach wall of the Gatun Locks, upon which the front tower will be founded.

General plant of lighthouse subdivision at Balboa—Forty reinforced concrete stair treads, 15 radial beams, 9 stair strings, 8 architrave moldings, 8 window sills and 8 lintels were cast at this plant during the month. Nineteen reinforced concrete beacons were also cast. The forms for the reinforced concrete roof for above were finished, and the casting of those units was commenced. The structural steel for five concrete steel beacons for the Pacific Division was delivered by the Gorgona shops.

Two wooden lighters, 30 feet long and 12 feet 6 inches beam, were under construction on the lake shore at Gatun.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month two shovels were engaged on borrow pit excavation for the locks backfill and for construction tracks, 62,663 cubic yards of material being removed.

Backfill—Backfilling behind the side and center walls of the middle and lower locks was continued. The quantity placed during the month aggregated 60,817 cubic yards, distributed as follows: East wall, 15,529 cubic yards; west wall, 40,616 cubic yards; and the center wall, 4,672 cubic yards, which was 73.9 per cent of the entire backfill.

Receiving and Issuing Material—The receipts of rock exceeded the consumption by 17,123 cubic yards, and the consumption of sand and cement exceeded the receipts by 7,685 cubic yards and 7,419 barrels, respectively.

Mixing and Placing Plants—Plant No. 1 and all portable mixers were kept in satisfactory operation during the month. Plant No. 2 was shut down on March 11, and the work of dismantling commenced on March 12.

Power Plant and Pumps—The operation of the power plant and pumps was satisfactory.

Iron and Steel Work—During the month 325 tons of fixed steel and 151,528 feet of reinforcing rods were placed; 17 tons of reinforcing rails and 30.1 tons of electric return track were laid.

Concrete Work—There was an increase of 868 cubic yards in the amount of concrete laid as compared with the figures for the preceding month. The daily average for the 26 working days was 1,059 cubic yards, as compared with a daily average during February of 1,111 cubic yards. The total amount of concrete placed during the month was 27,532 cubic yards. The place measurement exceeded the bucket measurement by 40 cubic yards. Of the total concrete, 4,622 cubic yards were placed in the upper lock, 1,842 cubic yards in the middle lock, and 21,068 cubic yards in the lower lock. The concrete work for the entire lock system was 92.51 per cent completed at the end of March.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)..	9.00	8.50
Average number of hours per day worked, per strand of cableway, laying concrete and large stone (actual working time)	2.48	....
Average number of mixers per day	4.00	1 00
Average hourly output per mixer (actual working time), cu. yds.	57.31	62.92
Average amount of concrete and large stone laid per hour, per strand of cableway (actual working time) cu. yds.	36.57	....
Large stone laid, cu. yds	....	....
Concrete laid, cableways, cu. yds.	21.512.00	....
Concrete laid, crane and derrick cu. yds.	3.572.00	....
Concrete laid, derricks, cu. yds..	....	1,008.00
Concrete laid, portable mixers..	....	1,400.00
Total amount of concrete and large stone laid, cu. yds.	25,084	2,408

GATUN DAM.

Construction during the month increased the total fill, as determined by cross sections of the material in place, by 471,933 cubic yards, making the total amount in place 18,522,286 cubic yards. On April 1 the dam was 86.4 per cent completed.

Hydraulic Fill—The dredges increased the hydraulic fill by 242,874 cubic yards. The total hydraulic fill in place March 31 was 9,395,468 cubic yards.

Dry Fill—The material received from the steamshovels, amounting to 229,059 cubic yards, was placed on the north and south toes of the dam, east and west of the Spillway, making the total dry fill in place 9,156,818 cubic yards.

GATUN SPILLWAY.

Excavation—During the month 254 cubic yards of rock were excavated by hand in preparing foundations, increasing the total on March 31 to 1,589,108 cubic yards.

Backfill—Backfilling was not extended during the month, the total remaining at 16,236 cubic yards.

Concrete—The work of placing concrete was continued. The amount placed during the month aggregated 7,806 cubic yards, which increased the total to 194,478 cubic yards. The concrete work for the spillway was 86.43 per cent completed.

HARBOR AND CHANNEL SECTION.

Dredging from Ocean to Mindi—Five dredges removed 144,265 cubic yards of earth and 40,343 cubic yards of rock from the canal prism. In addition, the dredge *Chagres* removed 511 cubic yards of earth and 2,181 cubic yards of rock for the dynamite dock, and 2,785 cubic yards of earth from the fortification rock and sand dock. On March 31, 40 feet of water could be carried from zero to zero plus 2,800 feet; 35 feet to Mile 3 plus 3,650 feet; 30 feet to Mile 3 plus 3,700 feet; 20 feet to Mile 5 plus 2,438.9 feet, the point of intersection with the French canal.

Approach to Gatun Locks—Two dredges removed 236,380 cubic yards of earth and 7,638 cubic yards of rock from the canal prism.

PORTO BELLO.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day, hours	8.00
Average number of hours worked per day..	3.97
Average number of cubic yards per hour of working day	227.32
Average number of cubic yards per working hour	458.25
Maximum day's output (4 hrs. 30 min.) Cu. Yds	2,050.00
Average day's output (26 days) Cu. Yds...	1,818.54
Average hourly output (164 hrs. 35 min.) Cu. Yds	287.22
Total output for the month, Cu. Yds	47,282.00

SAND, STONE, AND CEMENT SERVICE.

In connection with this service plant steamed 3,550 miles, handled 515 barges, and carried 2,645 passengers.

WEST BREAKWATER, COLON.

During the month 48,401 cubic yards of material were excavated and dumped from the trestle. The double track trestle was extended 596 linear feet. On April 1 the trestle extended 10,164 linear feet from shore. Nine thousand and sixty-eight cubic yards of Porto Bello rock were placed on the breakwater, making a total of 41,856 cubic yards used for that purpose to April 1. The total amount of rock dredged and dumped on the West Breakwater to March 1, 1912, was 920,533 cubic yards. During the month 50,162 cubic yards of rock were dredged and dumped, increasing the total to 970,695 cubic yards.

The amount of dry fill placed to April 1 was 710,246 cubic yards.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work.

Work was continued on the Colon street improvements.

Central Division.

During the month of March the total amount of material excavated in the Central Division was 1,736,777 cubic yards, of which 374,100 cubic yards were classified as earth and 1,363,677 cubic yards as rock. Of this quantitiy, 1,702,125 cubic yards were removed by steamshovels, 24,496 cubic yards by cranes, and 100 cubic yards by hand. Contractors removed 8,016 cubic yards by hand and 2,040 cubic yards by steamshovel. Of the total, 1,712,225 cubic yards consisted of primary excavation for the canal prism, and 24,552 cubic yards were gravel removed and incline excavation outside of the prism.

The daily average number of steamshovels at work during the month was 46.27, and the total number of shovel days was 1,203, as compared with 43.75 at work during the month of February, with 1,050 shovel days.

For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material		Av. No. of shovels at work	W'kg days.	Av. yards per shovel day
		Rock.	Earth.			
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*			*C. Y*
1911: March .	1,961,204	1,478,558	482,646	50 63	27	1,434.70
1912: March .	1,702,125	1,355,061	347,064	46 27	26	1,414.90

Rainfall at Empire: 1911, 0.20 ins.; 1912, 0.01 ins.

The above table shows the average output per shovel to be 1.38 per cent greater in March 1911, than in the corresponding month of the present year.

The total amount of the material excavated from the prism in the Culebra Section of the Central Division in March, 1912, 1,539,618 cubic yards, was the highest record in that section for the month of March, except March, 1911, when 1,728,738 cubic yards were removed.

The total estimated amount of material to be removed in the Central Division, according to the revised estimate of July 1, 1911, was 101,801,296, and up to April 1, 1912, 89,999,246 cubic yards had been removed, leaving 11,802,050 cubic yards to be removed in order to complete all excavation in the Central Division. From these figures it will be seen that 88.40 per cent of all excavation in the Central Division had been completed up to the close of the month of March, and 11.60 per cent remained uncompleted.

Considering the two sections which compose the Central Division, the excavation completed and that to be completed at the close of March operations was as follows:

CULEBRA SECTION.	*Cu. Yds.*
Completed	77,808,046
To be completed	11,635,959

CHAGRES SECTION.	*Cu. Yds.*
Completed	12,191,200
To be completed	166,091

From the above figures it will be seen that the Culebra Section, locally known as the "Culebra Cut," was 86.99 per cent completed, with 13.01 per cent to be completed; the Chagres Section was 98.66 per cent completed, with 1.34 per cent to be completed.

During the month 7,650 cubic yards of material were dumped in the embankment for the new roadbed for the relocation of the Panama railroad, increasing the total amount used for this purpose to 4,154,443 cubic yards. During the month 1,377 cubic yards of rock and earth were furnished for the Colon breakwater, and 39,007 cubic yards to the Pacific Division for backfill at Pedro Miguel locks.

The daily average number of laborers at work on the whole Division during the month was 7,541 and the daily average number of gold employes was 811.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

Excavation—The total excavation during the month amounted to 149,079 cubic yards, of which 67,419 cubic yards were classified as earth, and 81,660 cubic yards as rock.

Filling and Embankment—During March, 86,252 cubic yards of dry filling were added to the prism of the west dam at Pedro Miguel, increasing the total amount of material in place at the close of the month to 478,370 cubic yards. The backfill at Pedro Miguel was increased by 18,207 cubic yards, the total amount in place at the end of the month amounting to 551,438 cubic yards.

At Miraflores, 24,570 cubic yards were added to the dry fill in the toes of the west dam, increasing the total amount in place at the end of the month to 1,146,342 cubic yards. The backfill was increased by 48,160 cubic yards, the total aggregating 473,744 cubic yards at the end of the month.

Pedro Miguel Lock—Excavation of the canal prism between the Pedro Miguel and Miraflores Locks was continued, the spoil being used for filling the core of the west dam. The east rock toe of the dam was continued toward the core with Lidgerwood trains of rock from the Culebra Cut. The amount of iron placed in the masonry aggregated 188,872 pounds.

Concrete Work—The total amount of concrete and large stone laid at Pedro Miguel was 9,459 cubic yards, as compared with 12,639 cubic yards during February. The concrete was placed as follows: 50 cubic yards in the northeast wing wall; 3,834 cubic yards in the north center guide wall; 845 cubic yards in the west wall; 950 cubic yards in the east wall; 1,552 cubic yards in the center wall; 80 cubic yards in the southeast wing wall; and 2,020 cubic yards in the floors.

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours)	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	3.75
Average number of mixers per day	5.15
Average hourly output per mixer (actual working time) Cu. Yds	16.07
Large stone laid, Cu. Yds	
Concrete laid, Cu. Yds	9,459.00
Total concrete laid, Cu. Yds	9,459.00

Average number of mixers, 5.15, consisted of two 2-cubic yard and five ½-cubic yard mixers. Placing plant consisted of locomotive cranes and derricks, averaging 4.23 units per day.

Miraflores Locks—The McClintic-Marshall Construction Company finished the re-erection of the fourth and final chamber crane, which completed their contract in connection with the moving from Pedro Miguel, and re-erecting at Miraflores, of two berm and four chamber cranes. Dry excavation in the lower lock and canal prism immediately south of the same, also filling on the east and west toes of the west dam were continued during the month. Work was continued in connection with backfilling behind the east and west lock walls. The sinking and filling of concrete caisson foundations for the north center guide wall was continued. During the month the amount of iron placed aggregated 587,922 pounds.

Concrete Work—The total amount of concrete and large stone laid at Miraflores was 83,722 cubic yards, as compared with 63,893 cubic yards during February. The concrete was placedas follows: 2,428 cubic yards in the north center guide wall; 30,044 cubic yards in the east wall; 23,420 cubic yards in the center wall; 23,137 cubic yards in the west wall; and 4,677 cubic yards in the floors.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxillary Plant.
Length of working day (hours)	8.00 & 12.00	8 & 12
Average number of hours per day worked laying concrete and large stone (actual working time)	6.12	6.12
Average number of mixers per day	7.92	9.50
	Cu. Yds.	*Cu. Yds.*
Average hourly output per mixer (actual working time)	37.67	23.74
Average amount of concrete and large stone laid per hour, per berm, or chamber crane (actual working time)	63.72	....
Large stone laid	....	....
Concrete laid	61,078.00	22,644.00

Two berm cranes, one chamber crane, and two 2-cubic yard auxiliary mixers worked 12 hours per day.

Permanent plant consisted of four berm cranes, daily average 4, and a daily average of 3.2 chamber cranes.

Auxiliary plant consisted of two 2-cubic yard mixers, daily average 2; nine ½-cubic yard mixers, daily average 7.5, and three locomotive cranes and derricks, daily average 1.54.

DISTRICT NO. 2—DREDGING.

The following is a statement of the output of the five dredges which were in operation during the month, and of the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.		PLANT		Total	Remarks.
		Earth	Rock	Earth.	Rock		
		Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	
Cardenas	Dipper	13,656	13,656	....	....	27,312	Place measurement
Marmot	Ladder	5,985	8,266	....	...	14,251	Place measurement
Badger	Ladder	2,927	849	83,340		87,116	Place measurement
Mole	Ladder	2,136	15,665	......	... ...	17,801	Scow measurement
Culebra	Suction	267,542	....	....	....	267,542	Scow measurement
Total	....	292,247	38,436	83,340		414,023	
Hydraulic excavation	....	*74,256	....	....		74,256	Place measurement
Grand Total	... .	366,503	38,436	83,340	...	488,279	

*Excavated from Canal prism, south of Miraflores lock site.

CHAMÉ SAND EXCAVATION.

Approximately 51,138 cubic yards of sand were excavated at Punta Chamé and delivered at Balboa.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines wete maintained and extended as required to facilitate construction work.

Work was continued on the Panama street improvements.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours)	18.00
Average number of hours per day (actual working time)	11.67
Average number of cubic yards crushed per hour working day	210.50
Average number of cubic yards crushed per working hour	424.50
Total output for the month, cubic yards	98,500.00

Relocation of Panama Railroad.

During the month 63,035 cubic yards of material were excavated, increasing the total excavation at the close of the month to 10,161,227 cubic yards, and 68,025 cubic yards of material were placed in embankment, increasing the total for this purpose to 16,384,136 cubic yards.

No temporary trestle was driven during the month. Work on bridges and culverts was continued. At the end of the month there were 64,512 linear feet of 70-pound and 134,290 linear feet of 90-pound track. The force averaged 597 men.

Quartermaster's Department.

LABOR.

The force reports show practically no change in the number of laborers employed.

QUARTERS.

The quarters situation remains practically the same as reported last month.

MATERIAL AND SUPPLIES.

The value of material received from the United States during the month was $1,643,621.59. Supplies during the month were delivered by 45 steamers, the total weight of cargo aggregating 42,984 tons, exclusive of 1,919,952 feet B. M. yellow pine lumber, 2,772,691 feet B. M. Douglas fir lumber, 22,835 feet B. M. white oak lumber, and 1,649 pieces of piling.

Subsistence Department.

The operation of the European laborers' messes, the colored laborers' kitchens and the line hotels showed a net profit of $4,061.79. The operation of the Hotel Tivoli showed a net profit of $13,876.32, and there was a net profit on restaurants, penitentiary, tugs and dredges of $308.00. The net profit on subsistence operations was $18,246.11.

Department of Civil Administration.

COURTS.

During the month two civil cases were disposed of in the Supreme Court, 40 civil and 44 criminal cases in the Circuit Courts, and 102 civil and 614 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for March amounted to $375,605.68, and the fees to $1,790.31. Receipts from stamp and card sales, and newspaper postage aggregated $8,289.38. The total collection of revenues made by the Division was $25,458.98, and the collection on account of court fines, costs and fees, $3,332.93.

Twenty-seven vessels entered at and 24 vessels cleared from the port of Ancon; and 22 vessels entered at and 25 vessels cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 639, of whom 597 were men and 42 women. Twenty-two nations, or 45 separate states and dependencies, were represented. The total number of arrests for the month was an increase of 20 as compared with the month of February. Eight convicts were committed to the penitentiary, and 12 were discharged, leaving 145 in confinement at the close of the month. The cost of guarding and subsisting the convicts was $2,900.09, and the value of their work on Canal Zone roads $2,652.80.

DIVISION OF FIRE PROTECTION.

Sixty-five fires were reported in the Canal Zone during the month, as compared with 48 in February. The damage to Commission property was $470.00, and to private property $2,147.00.

DIVISION OF PUBLIC WORKS.

In the city of Panama the average daily consumption of water was 1,420,868 gallons and in Colon 1,230,415 gallons.

The usual inspection and maintenance work of this division was performed during the month.

DIVISION OF SCHOOLS.

The net enrollment in the white schools during the month was 1,223 and the average daily attendance 977.4, or 94.4 per cent of the enrollment; and in the colored schools the net enrollment was 1,445, and the average daily attendance 783.6, or 82.9 per cent. Forty-six white and 29 colored teachers were employed in the Division on March 31.

Department of Sanitation.

The total number of deaths from all causes among employes was 36. These were divided as follows: From disease, 28, and from violence, 8, giving the annual average per thousand of 6 57 and 1.88, respectively.

The annual average death rate per thousand among employes for the month of March in previous years since American occupation was as follows:

1905	12.27
1906	37.44
1907	40.23
1908	12.47
1909	8.76
1910	8.91
1911	10.76

The annual average death rate per thousand in the cities of Panama, Colon, and the Canal Zone, including both employes and non-employes, was 14.67.

The annual average death rate per thousand for the month of March among the same class of population for previous years was as follows:

1905	36.51
1906	46.72
1907	32.32
1908	20.67
1909	17.07
1910	18.33
1911	22.22

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was, for whites, 2.75, blacks, 7.90, giving a general average of 6.57. For the same month during 1910, the annual average death rate per thousand from disease was, whites, 3.89, blacks, 5.87, giving a general average of 5.39, and for the same month during 1911, whites, 3.88, blacks, 7.76, giving a general average of 6.76.

Among employes during this month deaths from the principal diseases were as follows: Chronic nephritis, 3; dysentery, clinical, 2; lobar pneumonia, 3; measles, 2; tuberculosis, 6; typhoid fever, 1, leaving a balance of 11 deaths from all other diseases, and 8 deaths from external violence.

One case of yellow fever from Guayaquil was taken from the steamship *Chile* at the Culebra Island Quarantine Station on March 2, which resulted fatally on March 4. With this exception, no cases of yellow fever, small pox, or plague originated on or were brought to the Isthmus during the month.

Respectfully,
GEO. W. GOETHALS, *Chairman.*

PANAMA CANAL BASEBALL LEAGUE.

RESULT OF GAMES, APRIL 14.

At Ancon—Com.-Sub , 5; Ancon, 4.

STANDING OF CLUBS.

	P.	W.	L.	P.C.		P.	W.	L.	P.C.
Com.-Sub.	14	10	4	.714	Empire	13	7	6	.538
Ancon	15	9	6	.600	10th In'ty.	14	3	11	.214

SCHEDULE FOR APRIL 21.

At Ancon—Ancon. vs. Empire.

At Empire—Com.-Sub vs. 10th Infantry.

GAME AT ANCON, APRIL 14.

C.-S.	AB.	H.	PO.	A.	E.	Ancon.	AB.	H.	PO.	A.	E.
Buch'an,cf.	5	3	1	0	0	Lindberg,rf	4	2	3	1	0
Herring,2b.	4	1	2	0	0	Edwards,lf.	5	1	3	0	0
Curtis,3b..	5	0	3	2	0	Drennan,cf	4	2	1	0	0
Mosher,p,lf	4	1	1	3	0	Snyder,2b.	5	1	3	2	1
Smith,ss...	5	3	4	4	1	Pear'an,3b.	4	0	2	2	0
Weiss,1b...	5	2	5	0	0	Potter,ss...	4	1	2	1	3
Beard,rf...	4	2	2	0	0	Nygren,1b.	4	2	7	1	0
Coffin,lf...	3	1	2	0	0	Hodnot,c..	4	2	6	0	0
Perdue,lf..	1	0	1	0	0	Murray,p..	3	1	0	3	0
Sterner,c..	4	0	6	0	0						
Davis,p...	0	0	0	2	0						
Totals....	40	13	27	11	1	Totals....	37	12	27	10	4

Com.-Sub	0	0	0	1	0	0	0	3	1	—5
Ancon	0	0	0	0	0	0	2	2	0	4

Runs—C.-S.: Herring, Smith 2, Weiss, Beard, Ancon: Lindberg, Potter, Nygren, Murray. Earned Runs—C.-S.2, Ancon 3. Two-base hits—Beard, Lindberg, Snyder. Three-base hits—Drennan. Home runs—Smith, Nygren. Stolen bases—Herring, Smith. First base on errors—C.-S. 1, Ancon 2. Base on balls—off Mosher 2, off Davis 1, off Murray 1. Struck out—by Mosher 4, by Davis 2, by Murray 5. Hit by pitcher—by Mosher (Lindberg), by Davis (Pearman), by Murray (Mosher). Hits—off Mosher 11 in 8 innings, off Davis 1 in 1 inning. Left on bases—C.-S. 10, Ancon 11. Double plays—Smith to Herring. Passed balls—Sterner, Hodnot. Umpire—Scull. Time of game—2.15. Scorer—Hoffman.

The game scheduled at Empire, April 14, between Empire and 10th Infantry was called on account of rain.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon, during the week ending April 13:

Albanian, April 6, from Liverpool, with 200 barrels carbolic acid, for stock.

Albenga, April 8, from New York, with 137,404 bags cement, for Atlantic and Pacific Divisions.

Allianca, April 8, from New York, with 90 cases machinery, for Atlantic Division; 44 cases caskets, 42 cases sherry wine, 25 cases drugs and sundries, for Sanitary Department; 23 packages castings, 412 pieces castings, for Mechanical Division; 79 cases signal material, 80 cases transil oil, for Panama Railroad Company; 25 cases stationery, 59 reels sash cord, 75 cases caustic soda, 139 kegs bolts, 31 barrels rosin, 14 cases manila tags, 26 bales packing, 100 cases sal. soda, 19 cases steamshovel parts, 16 casks chain, 20 cases belt dressing, 249 pieces iron pipe, 14 bundles baskets, for stock; and a miscellaneous cargo, the whole consisting of 1,720 packages, weighing 300 tons.

Tinhow, April 9, from New Orleans, with 2,493 pieces lumber, for Mechanical Division; 2,224 barrels paving brick, for Panama Railroad Company; 2,366 pieces lumber, 170 pieces piling, 12 pieces chains, for stock.

Zacapa, April 11, from New York, with 50 bundles baskets, 15 cases hardware, for stock; 14,000 pieces hollow tile, for Panama Railroad Company.

Parismina, April 11, from New Orleans, with 2,263 pieces lumber, for Mechanical Division; 6,110 pieces lumber, 54 pieces piling, 413 sacks dairy feed, 135 barrels fire clay, 50 crates paste, for stock; 4 cases motors, for Atlantic Division.

Sixaola, April 13, from New York, with 72 cases tin, 20 cases packing, for stock; 200 pieces lumber, for Mechanical Division; 104 cases copper bars, for Pacific Division; 17,833 pieces hollow tile, for Panama Railroad Company.

Misdirected Letters.

ANCON, C. Z., April 10, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Dierctor of Posts, and may be secured upon request of the addressees:

Allen, George B
Brown, Jacob
De vours, J. C
Doyle, William
Duncan, Arthur
Ellis, David E.
Finch, E. H.
Gaston, J.
Godfrey, Miss Mary Jane
Hall, Wm. T
Jay, William C
Kiehle, Fred E
Love, William
Marsden, Mrs. M. W.
McCubbins, Clyde
McDaniel, Julia
Mengel, Mrs. C. E
Parker, Foster T. (4)
Potts, F. A
Rhodes, Peter N.
Ring, Harry
Small, Walter
Smith, H. C.
Stoddard, Richard J.
Sunstrom, Mrs. Morris
Vaughan, Charles V
Wurster, Charles C.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving picture shows for the week ending April 27, is as follows: Monday, Gorgona; Tuesday, Corozal; Wednesday, Empire; Thursday, Culebra; Friday, Gatun; Saturday, Cristobal.

ISTHMIAN INDOOR BASEBALL LEAGUE.

The standing of the teams in the indoor baseball league on April 13, was as follows:

Team.	Played.	Won.	Lost.	P. C.
Gorgona	6	6	0	1.000
Gorgona	6	6	0	1.000
Culebra	7	6	1	.857
Corozal	6	3	3	.500
Empire	7	3	4	.428
Gatun	7	2	5	.285
Cristobal	7	1	6	.142

Results of games played April 13 were as follows: Gorgona, 22; Corozal, 12. Culebra, 32; Cristobal, 11. Gatun, 15; Empire, 14.

Games are to be played on April 20, as follows: Culebra at Gatun, Gorgona at Cristobal.

CULEBRA.

Capt. Jack Crawford gave his entertainment on Tuesday evening. Because of the entertainment on Tuesday the glee club met on Thursday. It is planning a concert for the last week of May.

The game of billiards between Empire and Culebra resulted as follows: *Empire*—Wood 88 points, Barns 96 points. *Culebra*—Tragsdorf 100 points, Conlon 100 points.

The Hill Magical Company will be in Culebra on Friday, April 19, at 8.15 o'clock. Members free, non-members 50 cents, and children 25 cents.

EMPIRE.

The following men bowled games of over one hundred in duckpins during the past week: Pinney, 132, Grund, 103; Rodeighiro, 110, 100, 114; Bayne, 108; Goolsby, 106.

The indoor baseball game played at Empire between Empire and Gatun was won by Gatun by the score of 15 to 14.

The Empire minstrel troupe will give a return engagement at Empire on April 30 and play at Ancon on April 27, and at Camp Elliott on April 18.

GORGONA.

There were 245 people at the moving picture show on Wednesday night, April 10. There was a show for the night men at one o'clock Thursday morning after the night force stopped work. Coffee and sandwiches were served.

The first game in the Duckpin League series in Gorgona was played on Saturday night, April 13, the results of the games between Gorgona and Empire being:

Gorgona.				Empire.			
Simms	101	82		Pinney	96	96	95
Otis	76	90	101	Giavolli	90	83	122
Humphrey	80	87	81	King	89	88	81
Robinson	85	90	90	Grund	75		99
Dunlop	91	103	71	Rodeighiro	101	94	97
Powell			76	Sawtelle		77	
Total	433	452	419		451	438	494

The following scores were made by Corozal and Gorgona in the Inter-Association pool tournament:

Pool. Gorgona—Hill, 100; Hill, 100; Orr, 100; Orr; 69; Tougher, 55; Tougher, 88; Ashman, 100; Ashman, 85. *Corozal*—Baker, 49; Baker, 49; Lofgren 89 Tribolet, 100; Roberts, 100; Roberts, 100; Jones 94; Jones, 100. *Billiards. Gorgona*—Bermann, 51; Berman 71. *Corozal*—White, 100; White, 100.

GATUN.

Capt. Jack Crawford, the poet scout, gave his return engagement on Thursday, April 11. A farewell reception was given the Captain after the entertainment by about 40 members of the association, when he recited original verse and humorous anecdotes. Refreshments and cigars were served.

Dr. Orenstein gave a lecture on "Flies and Diseases" at the clubhouse on Tuesday evening, April 17.

Assistant Secretary Dwelle led the discussion club on Sunday evening, April 14, the subject being "The Woman in the Home."

The Isthmian Duckpin League series opened at Gatun with Cristobal as opponents, Saturday night, April 13. Cristobal won all three games with the following scores:

Cristobal	472	442	458
Gatun	461	415	445

CRISTOBAL.

The next in the series of moving picture shows will be on Friday evening, April 19. Messrs. Clause and Weston will provide vocal and instrumental music between films.

On Saturday evening, April 20, the Gorgona baseball team will play Cristobal on the local floor.

On Tuesday evening, April 23, the Hill Magical Co. will give a program in necromancy and hypnotism.

At the session of the debating club to be held on Wednesday evening, April 24, the following subject will be discussed: Resolved: "That the United States Should Intervene in Mexico to Protect her National Interests." All men are invited.

Notice to Mariners.

BALBOA, C. Z., April 13, 1912.

A pinnacle rock with a least depth of 14 feet at mean lower low water lies about 300 yards southeasterly from San Jose Rock. This is about 20 yards in diameter and is surrounded by depths of 36 feet or more. Vessels rounding San Jose Rock should keep not less than ½ mile from the rock for safety.

An extensive rocky area extends from the rock just described to the southeast to a point ⅜ mile from San Jose Rock. The least depth is 32 feet. It will be noted that on several of these pinnacle rocks less depth is found than the proposed published depth for the Canal prism, and for that reason I include them in this report.

A rocky area was found about 1½ statute miles southeasterly from San Jose Rock. An area ½ mile long and ⅜ mile wide is continuously rocky. The least depth is 32 feet at the mean lower low water, and this was found on several small rocks. Vessels should not anchor on this area as the rocks are ragged.

This information will duly appear on charts of the U. S. Coast and Geodetic Survey.

Due to heavy blasting at Flamenco Island vessels are warned against approaching close to the island at all times, and more especially during the noon hour and after 5.00 p. m.

J. ST. C. HUNT, *Port Captain.*

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, April 13, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia.	Alhajuela	Gamboa.	Bohio.	Gatun Lake.
Sun., April 7	124.7	91.0	43.7	17.7	17.6
Mon., April 8	124.6	91.0	43.7	17.6	17.6
Thue., April 9	124.6	91.0	43.7	17.6	17.5
Wed., April 10	124.6	91.0	43.6	17.5	17.4
Thurs., April 11	124.6	91.1	43.8	17.4	17.4
Fri., April 12	124.7	91.1	43.8	17.4	17.3
Sat., April 13	124.8	91.2	43.9	17.4	17.3
Height of low water to the nearest foot	125.0	91.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending April 24, 1912 (75th meridian time):

DATE.	Low.	High.	Low.	High.	Low.
	A.M.	A.M.	A.M.	P.M.	P.M.
April 18	......	4.07	10.20	4.21	10.43
April 19	......	4.45	10.59	4.58	11.22
April 20	......	5.25	11.38	5.38	......
			P.M.		
April 21	12.04	6.06	12.21	6.21	......
April 22	12.48	6.51	1.08	7.08	......
April 23	1.37	7.42	2.00	8.00	......
April 24	2.33	8.40	3.05	9.05	......

The following vessels arrived, or departed from, the port of Balboa during the week ending April 13:

Arrivals—April 8, *Mantaro*, from Callao; April 8, *Aysen*, from Valparaiso; April 11, *U. S. S. Vicksburg*, from Corinto; April 12, *U. S. S. Prometheus*, from south; April 13, *U. S. S. Yorktown*, from south; April 12, *Santa Maria*, from Port Harford; April 12, *San Jose*, from San Francisco.

Departures—April 8, *Barracouta*, to Central America; April 8, *Stanley Dollar*, to San Francisco; April 8, *Quito*, to Guayaquil; April 8, *Guatemala*, to Paita; April 10, *Peru*, to San Francisco; April 12, *Navajo*, to San Francisco; April 13, *Peru*, to Guayaquil.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Cristobal, C.Z., Sunday, April 21, 1912, at 4.30 p. m.

The next concert will be given at Culebra, April 28 at 5.45 p. m.

LOST—On Thursday, April 11, in Empire, a small gold brooch in the form of a treble clef. Finder please return to House 108-C, Empire.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Advance	P. R. R	Saturday	April	13
Panama	P. R. R.	Saturday	April	20
Allianca	P. R. R.	Friday	April	26
Colon	P. R. R.	Thursday	May	2
Advance	P. R. R.	Thursday	May	9
Panama	P. R. R.	Wednesday	May	15
Allianca	P. R. R.	Tuesday	May	21
Colon	P. R. R.	Monday	May	27
Advance	P. R. R.	Monday	June	3
Panama	P. R. R.	Saturday	June	8
Allianca	P. R. R.	Friday	June	14
Colon	P. R. R.	Friday	June	21

CRISTOBAL TO NEW YORK

Colon	P. R. R.	Saturday	April	20
Advance	P. R. R.	Friday	April	26
Panama	P. R. R.	Friday	May	3
Allianca	P. R. R.	Thursday	May	9
Colon	P. R. R.	Wednesday	May	15
Advance	P. R. R.	Tuesday	May	21
Panama	P. R. R.	Monday	May	27
Allianca	P. R. R.	Sunday	June	2
Colon	P. R. R.	Sunday	June	9
Advance	P. R. R.	Saturday	June	15
Panama	P. R. R.	Friday	June	21

NEW YORK TO COLON.

Almirante	U. F. C.	Wednesday	April	10
Prinz Sigismund	H.-A.	Saturday	April	13
Trent	R. M.	Saturday	April	13
Carrillo	U. F. C.	Saturday	April	13
Santa Marta	U. F. C.	Wednesday	April	17
Turrialba	U. F. C.	Saturday	April	20
Prinz August Wilhelm	H.-A.	Saturday	April	20
Metapan	U. F. C.	Wednesday	April	24
Arcadian	R. M.	Saturday	April	27
Prinz Eitel Friedrich	H.-A.	Saturday	April	27
Tivives	U. F. C.	Saturday	April	27
Zacapa	U. F. C.	Wednesday	May	1
Sixaola	U. F. C.	Saturday	May	4
Prinz Joachim	H.-A.	Saturday	May	4
Almirante	U. F. C.	Wednesday	May	8
Tagus	R. M.	Saturday	May	11
Prinz Sigismund	H.-A.	Saturday	May	11
Carillo	U. F. C.	Saturday	May	11
Santa Marta	U. F. C.	Wednesday	May	15
Prinz August Wilhelm	H.-A.	Saturday	May	18
Turrialba	U. F. C.	Saturday	May	18
Oruba	R. M.	Saturday	May	25
Prinz Eitel Friedrich	H.-A.	Saturday	May	25

COLON TO NEW YORK.

Zacapa	U. F. C.	Thursday	April	18
Prinz Joachim	H.-A.	Tuesday	April	23
Sixaola	U. F. C.	Tuesday	April	23
Almirante	U. F. C.	Thursday	April	25
Prinz Sigismund	H.-A.	Monday	April	29
Tagus	R. M.	Tuesday	April	30
Carrillo	U. F. C.	Tuesday	April	30
Santa Marta	U. F. C.	Thursday	May	2
Turrialba	U. F. C.	Tuesday	May	7
Prinz August Wilhelm	H.-A.	Tuesday	May	7
Metapan	U. F. C.	Thursday	May	9
Prinz Eitel Friedrich	H.-A.	Monday	May	13
Orotava	R. M.	Tuesday	May	14
Tivives	U. F. C.	Tuesday	May	14
Zacapa	U. F. C.	Thursday	May	16
Prinz Joachim	H.-A.	Tuesday	May	21
Prinz Sigismund	H.-A.	Monday	May	27
Thames	R. M.	Tuesday	May	28

NEW ORLEANS TO COLON

Abangarez	U. F. C.	Saturday	April	13
Heredia	U. F. C.	Wednesday	April	17
Atenas	U. F. C.	Saturday	April	20
Orleanian	U. F. C.	Wednesday	April	24
Parismina	U. F. C.	Saturday	April	27
Cartago	U. F. C.	Wednesday	May	1
Abangarez	U. F. C.	Saturday	May	4
Heredia	U. F. C.	Wednesday	May	8
Atenas	U. F. C.	Saturday	May	11

COLON TO NEW ORLEANS

Parismina	U. F. C.	Thursday	April	18
Cartago	U. F. C.	Thursday	April	18
Abangarez	U. F. C.	Thursday	April	25
Heredia	U. F. C.	Thursday	April	25
Atenas	U. F. C.	Thursday	May	2
Orleanian	U. F. C.	Thursday	May	2
Parismina	U. F. C.	Thursday	May	9
Cartago	U. F. C.	Thursday	May	9

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

CANAL RECORD

Volume V ANCON, CANAL ZONE, WEDNESDAY, APRIL 24, 1912. No. 35.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Concrete in Pacific Division Locks.

The total amount of concrete required for the construction of the Pedro Miguel and Miraflores Locks as it has been given weekly in THE CANAL RECORD was based on estimates prepared July 1, 1910. Various causes have worked during the construction to increase the amount actually to be placed, and the total yardage is now estimated as follows:

	New Estimate. *Cu. Yds.*	Old Estimate. *Cu. Yds.*
Pedro Miguel Lock...	890,750	837,400
Miraflores Locks.....	1,412,736	1,362,000

Lighters for Sale.

The Washington office of the Isthmian Canal Commission has been directed to advertise for sale six lighters used up to the present time in hauling cement from the ships at Cristobal to Gatun for use in the making of concrete for the locks and spillway. These lighters were put in service in 1908, cost $20,628.82 each, and are in good condition. They are built of steel, are 110 feet long, 24 feet 6 inches beam, 7 feet 10 inches depth, gross tonnage 300, capacity 300 tons, quarters for one man on stern of each lighter. The lighters were built in the United States by the Maryland Steel Company and shipped knocked down to the Isthmus where they were erected at the Cristobal marine shops.

Timber in Gatun Lake Area.

Elsewhere in this issue of THE CANAL RECORD will be found an advertisement asking for bids for the privilege of cutting timber in the area within the Canal Zone that will be covered by Gatun Lake. The conditions governing the proposed contract are as follows:

(1) The privilege consists of a right to cut timber within the defined area until such time as the timber may be required by the Government, in which event the privilege would cease as of date of due notification to that effect to the contractor.

(2) The privilege would under no circumstances extend beyond January 1, 1915.

(3) Bidders will submit bid in one lump sum for the privilege.

(4) Payment of the full amount of bid will be due and payable within thirty days from notification by the Chief Quartermaster that bid has been accepted.

(5) Upon payment of full amount of bid, the successful bidder may proceed at once to cut and remove timber within the area designated and may continue to cut and remove same until notified by the Government that the privilege is recalled, or until the first day of January, 1915.

(6) The successful bidder will be required to remove all timber cut by him and to make disposition by burning or otherwise, of all brush and limbs resulting from such cutting.

It is not known how much desirable timber there may be in the area to be flooded within the Canal Zone. It is probable there is only a small amount of hard woods, because the land along the Chagres River has been occupied to some extent for three hundred and fifty years, and most of the original wood has been cut, while much of the area has been burned over many times. So little desirable timber was found along the route of the Panama railroad at the time of its construction, 1850-55, that most of the ties were brought from Colombia. During the dry season of 1910 about 842 acres of land in the ship channel through the lake were cleared by contract, and on this area there were found only a few hardwood sticks, and a small number of espeve trees, a wood with little grain, from which 17 native canoes were made. The contractor obtained about 4,000 bags of charcoal at 40 pounds to the bag, and this was the most valuable by-product of his work. Among the cabinet woods found in the lake region, a few sticks here and there, are cocobolo, guayacan, Panama mahogany, Spanish cedar, and several light colored woods that are very hard and take a high polish. Many of these woods are too heavy to float.

Permanent Headquarters.

A committee has been appointed to recommend sites for the permanent administrative headquarters and offices of the Canal, and a permanent settlement for Canal employes in the vicinity of the Pacific terminus. The site for the office headquarters will be on Sosa Hill or at some other place nearby.

East Dam at Gatun Locks.

The construction of Gatun Locks, at the foot of the outermost of the hills which border the Chagres valley on the east as it narrows to the point selected for the dam and locks, has left between the east side wall of the locks and the hill, as it breaks back from the toe, a space which is lower than the proposed surface of Gatun Lake. This break in the rim of the basin will have to be filled with a dam. The filling necessitates the removal of several railway tracks passing through the dip at an elevation of from 45 to 75 feet above sea-level, extending to the auxiliary concrete mixing plant, the garage for the division motor car and the main line of the Panama railroad. The mixing plant has been dismantled, the garage has been moved and the connection with the Panama railroad will be effected by means of a new track, swinging from the rear of Gatun station around the hill from elevation 92 to a point beyond the nearest approach of the hill to the locks, from which it will dip with a heavy grade to the present tracks along the lower locks. A spur on the down hill side of the new track will afford a base for the dumping for the dam.

In anticipation of this work a concrete core wall, 4 feet thick and reaching from bedrock to the surface of the earth and backfill, was built from the east side wall of the lock to a point on the hill opposite at elevation 88 feet. The space between the core wall and the lake will be filled with selected clay, and on the seaward side of the core wall a miscellaneous rock fill will extend for several hundred feet, joining the point of the hill. The final height of the fill will be at elevation 92 feet, level with the present east backfill for the upper lock. A steamshovel cut away the knoll in the rear of the station, supplying spoil which was used in filling for the new track and in the dam, and when the knoll was reduced to the surrounding level the garage was moved to a point near the station.

Slight Earthquake Shock.

An earthquake shock of sufficient intensity to be felt at various points along the Canal Zone was registered on the seismographs at Ancon and Gatun on the night of April 16. The maximum amplitude was 68 millimeters on the north-south component, the approximate distance of the epicenter of the disturbance 200 miles, and the probable direction as registered by the seismoscope, northeast. The intensity was Force III (very feeble shock) on the Rossi-Forel scale. Shocks of similar magnitude were recorded on the Canal Zone on August 30, 1909, December 21, 1910, and April 10, 1911.

Steamshovel Damaged by Fire.

Fire which consumed a crib work composed of five layers of railroad ties, on which the 70-ton steamshovel No. 107 was temporarily supported in a stage of its work in the channel through the proposed Miraflores Lake, caused such injury to the shovel that it has been retired from service. The 6-inch solid steel axle, connecting the hind wheels of the truck under the rear end of the shovel, was so softened by the heat that it bent to an angle of about ninety degrees and the rear end of the shovel sagged down until the 15-inch car body "I" beams rested on the forward wheels of the truck and were distorted with dents 3 or 4 inches deep. The cast steel wheels were not distorted though the heat so expanded them that their junctures with the axle, on which they were originally forced by heavy hydraulic pressure, were loosened. The rear end of the car body, where the heavier part of the locomotive-type boiler projects beyond the rear truck, sags about 6 inches below the normal level. The car body bolster under the boiler sags at both ends, making an arch about 5

NOTES OF PROGRESS.

(Continued.)

inches high. The heat was most intense at the rear end, where the cribbing was higher, but the babbitt metal was melted out of every journal box on the shovel. The only wood used in the construction of the shovel, for the engineer's seat, for the block under his operating levers and for a guard over one of the engines, was consumed. The coal on hand caught fire and assisted in the distortion of the 6-ton sheet steel bunkers.

It has been decided, after an inspection at the Empire Shops, to which the shovel was taken after being jacked on new trucks, that it would be practicable to repair it but that in the present state of the construction work, with an excess of shovels on hand, it would be better to use the available parts for repairs to other shovels.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 81 per cent completed, 196,225 cubic yards, out of a total of 225,000, having been placed at the close of work on April 20. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
April 15	148	7.30	2
April 16	132	6.00	1
April 17	115	6.30	2
April 18	148	6.30	1
April 19	108	6.00	2
April 20	160	8.30	2
Total	812	41.00	1.6
*Previously reported	195,413		
Grand total	196,225		

Porto Bello Crusher.

A statement of the work done at the Porto Bello crusher, by days, for the week ending April 20, follows:

DATE.	Hours worked.	Cubic Yards.
April 15	3.30	1,872
April 16	3.50	1,980
April 17	3.30	1,792
April 18	4.35	2,090
April 19	3.55	1,816
April 20	5.15	2,176
Total	24.35	11,726

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending April 20, follows:

DATE.	Hours worked.	Cubic Yards.
April 15	8.05	2,973
April 16	6.55	2,348
April 17	14.45	5,606
April 18	11.50	4,206
April 19	12.35	4,288
April 20	8.25	3,081
Total	61.15	22,502

Bascule Bridge on Relocated Line.

The contract for furnishing material for the bascule span of the railroad bridge at Monte Lirio, including reinforcing trusses, counterweight and motors, has been awarded to the Penn Bridge Company of Beaver Falls, Pennsylvania, for $25,390. Delivery is to be complete within 120 days.

The work of installing the north shore span of the bridge will commence next week. A force of men has been engaged in grading the space between the two channel piers, clearing the ground of debris and smoothing the channel under the bascule span to an even level of 40 feet above the sea, which will afford a depth of 45 feet when the surface of Gatun Lake is at the proposed normal level.

PERSONAL.

Capt. R. E. Wood returned to the Isthmus on April 18, on the *Ancon*, from his leave in the States.

Sailing of the Ancon.

The steamship *Ancon* will sail from Pier No. 11, Cristobal, on Sunday, April 28, at 3.00 p. m.

CONCRETE WORK IN THE LOCKS.

Over 82 per cent of the concrete for the locks is in place, the amount at the close of work on April 20 being 3,553,446 cubic yards, out of a total of approximately 4,303,486. A total of 26,383½ cubic yards of concrete was laid in the locks during the week ending April 20.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on April 20 being 1,863,020 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending April 20, and of the total follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 15	330	5.31	3	....	....	....	....	388⅓
April 16	112	2.00	2	....	....	....	....	146
April 17	550	8.28	4	....	....	....	....	586
April 18	252	4.10	2	....	....	....	....	293
April 19	422	6.58	4	....	....	....	....	458
April 20	352	5.36	4	....	....	....	....	380
*Portable mixers	....	....	......	233⅓	....	....	....	....
Total	2,018	32.43	3.3	233⅓	....	....	....	2,251⅓
Previously reported	....	....	......	....	....	....	....	1,860,768⅔
Grand total	....	....	......	....	....	....	....	1,863,020

The 233⅓ yards shown for the portable mixers are reinforced concrete, and were placed on the following days: April 15th, 58⅓; April 16th, 34; April 17th, 36; April 18th, 41; April 19tb, 36; April 20th, 28.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 93 per cent completed, 834,568 cubic yards, out of a total of 890,750, bucket measurement, having been placed at the close of work on April 20. The record for each of the six working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 15	216	5.50	1	167	14.00	4	....	383
April 16	302	7.00	1	131	11.50	4	....	433
April 17	252	5.25	1	138	12.75	3	....	390
April 18	244	5.00	1	139	12.75	3	....	383
April 19	272	6.50	1	160	13.00	3	....	432
April 20	232	5.75	1	200	15.50	3	....	432
Total	1,518	35.00	1	935	79.50	3.33	....	2,453
Previously reported	....	....	......	....	....	......	4,423	832,115
Grand total	....	....	......	....	....	......	4,423	834,568

MIRAFLORES LOCKS.

Over 60 per cent of the concrete for the system of two twin locks at Miraflores was in place on April 20, the total amount on that date being 855,858 cubic yards, bucket measurement out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 14	....	....	......	....	....	......	149	14.00	2	....	149
April 15	1,556	38.67	8	1,070	17.45	2	370	33.00	7	....	2,996
April 15	2,096	55.50	8	1,260	19.00	2	541	45.50	9	....	3,897
April 16	1,514	44.51	8	1,288	20.00	2	794	62.50	9	....	3,596
April 17	1,874	53.97	8	1,154	18.00	2	951	58.50	9	....	3,979
April 19	1,910	57.99	8	1,284	20.00	2	790	64.50	8	....	3,984
April 20	1,176	40.17	8	1,130	18.00	2	772	47.50	8	....	3,078
Total	10,126	290.81	8	7,186	112.45	2	4,367	325.50	8.71	....	21,679
Previously reported	....	....	......	....	....	......	....	....	......	3,693	834,179
Grand total	....	....	......	....	....	......	....	....	......	3,693	855,858

CANAL MEDAL BAR LIST.

The attached list contains the names of employes and ex-employes of the Isthmian Canal Commission, who at some time during the past year completed their fourth year of continuous service on the Isthmus and are now entitled to their first service bar. The date shown opposite each name is that on which the bar service was completed.

All changes or corrections should be reported to the Office of the Chairman, at Culebra, at an early date.

As soon as the list is revised, numbers will be assigned by lot, on both medal and bar lists and the lists will be forwarded to the Washington Office where final arrangements will be made for the proper engraving. Distribution will be made about September 1 of the present year.

Name.	*Bar due.*
1911.	
O'Connor, Fred B	Jan. 1
Weston, Albert F	Jan. 1
Bloss, Harry I	Jan. 3
Johnson, Pearl A	Jan. 3
Jones, Llewellyn E	Jan. 3
Corrigan, John P	Jan. 8
Donahoe, Tim J	Jan. 8
Textor, Harry N	Jan. 8
Grozier, Thomas	Jan. 10
Krause, William F	Jan. 12
Buterbaugh, Frank	Jan. 14
Abernathy, Sherman C	Jan. 15
Adams, Harvey S	Jan. 15
Blakeman, Will C	Jan. 15
Duncan, Robert H	Jan. 15
Jennings, Charles E	Jan. 15
Kennedy, Archie	Jan. 15
Lohman, Charles H	Jan. 15
McGovern, John F	Jan. 15
Evans, William A	Jan. 18
Thayer, Jira P	Jan. 19
Harry, Samuel B	Jan. 21
McGowan, Arthur J	Jan. 21
Palmer, Eugene A	Jan. 21
Penn, Arthur B	Jan. 21
Thorpe, L. Dean	Jan. 21
Espy, Louis	Jan. 23
Shortt, Frederick	Jan. 23
Baker, Frederick M	Jan. 28
Hoffman, John L	Jan. 28
MacPherson, George W	Jan. 28
Sheehy, Dennis	Jan. 28
Stanley, Harry W	Jan. 28
Terwilliger, Ellsworth B	Jan. 28
Fuhrman, G. A	Jan. 29
Hines, William P	Jan. 29
Loulan, John T	Jan. 30
Stanley, Lewis P	Jan. 30
Hoyt, Charles	Feb. 1
Clark, Orrin M	Feb. 3
Corrigan, Peter F	Feb. 3
Cunningham, Homer C	Feb. 3
Wood, Joseph C	Feb. 3
Harris, William	Feb. 4
Gansereit, Carl	Feb. 6
Gabler, Albert	Feb. 8
Keltz, Ellis J	Feb. 8
Long, John N	Feb. 8
Stewart, Arthur B	Feb. 8
Heckman, John H	Feb. 11
Conlan, Charles P	Feb. 12
Demuth, William	Feb. 12
Gallagher, Charles G	Feb. 12
McCulloch, John A	Feb. 12
Roberts, Richard	Feb. 12
Smith, Richard C	Feb. 12
Weling, Benjamin D	Feb. 12
Claus, William	Feb. 15
Carr, Frank L	Feb. 18
Collins, Harry A	Feb. 18
Harwood, Robert	Feb. 18
Kull, August	Feb. 18
McLoughlin, Patrick A	Feb. 18
Morrison, John H	Feb. 18
Mudgett, Benjamin F	Feb. 18
Schenck, S. B	Feb. 18
Schlager, Charles J	Feb. 18
Shaeffer, Louis E	Feb. 18
Anderson, Frank A	Feb. 22
Nielsen, George N	Feb. 22
Moeller, L. A	Feb. 23
Jack, Gavin H	Feb. 25
Mers, John B	Feb. 25
Bryan, Clarence L	Feb. 26
Butler, Thomas J	Feb. 26
Collins, Cleveland C	Feb. 26
Davies, John L	Feb. 26
Humphrey, James H. K	Feb. 26
Draughon, Rufus L	Feb. 27
Giavelli, Leon W	Feb. 28
McKelvey, John F	Feb. 28
Brooke, William S	Mar. 1
Moran, John J	Mar. 1
Powell, Charles W	Mar. 1
Sullivan, Michael	Mar. 1
Wertz, Fred L	Mar. 2
Lacy, Abner B	Mar. 3
Steele, Russell L	Mar. 3
Bain, Harry G	Mar. 4
Blaisdell, James	Mar. 4
Christ, John S	Mar. 4
Hutton, Samuel	Mar. 4
Ives, Jesse R	Mar. 4
Evans, Peter	Mar. 7
Moulton, Nora .E	Mar. 7
Terry, George E	Mar. 8
Bethards, Edwin A	Mar. 11
Breneman, Wilson O	Mar. 11
Crump, Hammond F., Jr	Mar. 11
Dew, Michael	Mar. 11
Drysdale, Warren D	Mar. 11
Kerr, Alphonsus L	Mar. 11
McGraw, Daniel	Mar. 11
Reese, John L	Mar. 11
Riddle, Waldo R	Mar. 11
Schoellhorn, Henry	Mar. 11
Spinks, James	Mar. 11
Stevens, Edward W	Mar. 11
Vacher, Louis N	Mar. 11
Wollenberger, Paul	Mar. 11
Burrell, Herman L	Mar. 12
Burrell, Joseph A	Mar. 12
Gaillard, David DuB	Mar. 12
Goethals, George W	Mar. 12
Hill, John	Mar. 12
Callaway, Lawrence C	Mar. 14
Grier, Baxter R	Mar. 14
Watson, Roy R	Mar. 14
Bache, Charles W	Mar. 18
Garvin, John M	Mar. 18
Hennen, Lawrence W	Mar. 18
Hoadley, Edward D	Mar. 18
Kilmurray, William J	Mar. 18
McCusty, William H	Mar. 18
Phillips, John F	Mar. 18
Raiford, Andrew L	Mar. 18
Sibert, William L	Mar. 18
Snyder, Adam F	Mar. 18
Sutherland, Charles H	Mar. 18
Tolar, James L	Mar. 18
Clairain, Louis J	Mar. 19
Claybourn, Verner M	Mar. 21
Elsey, John T	Mar. 21
Jay, William C	Mar. 21
Jefferis, Paul M	Mar. 21
Lamb, Edward	Mar. 21
Reeves, Archibald, Jr	Mar. 21
Rousseau, Harry H	Mar. 21
Shaw, John E	Mar. 21
Smallwood, Thomas H	Mar. 21
Smith, Samuel L	Mar. 21
Waldron, Arthur W	Mar. 21
Montague, Charles H	Mar. 23
Wertz, Carl A	Mar. 23
Adams, James H	Mar. 25
Carswell, Louis C	Mar. 25
Housel, William H	Mar. 27
Howard, George A	Mar. 27
King, Clarence R	Mar. 27
Lord, Elmer E	Mar. 27
Markham, Mary C	Mar. 27
Piper, Lon W	Mar. 27
Pruyne, Allen L	Mar. 27
Robinson, Willard L	Mar. 27
Stephens, Nathaniel R	Mar. 27
Thomson, Emily C	Mar. 27
Yount, Jesse L	Mar. 27
Brown, James R	April 1
Lyon, George W	April 1
Bridges, John J	April 2
Brown, Arthur B	April 2
Capwell, John H	April 2
Crossley, Samuel J	April 2
Crouch, Walter E	April 2
Downey, Michael J	April 2
Jordan, William B	April 2
Laitinen, Albiin	April 2
La Rowe, John H	April 2
McClelland, John L	April 2
McCord, John E	April 2
Nupp, Warren	April 2
Repp, Earnest A	April 2
Soder, Frank J	April 2
Tafel, Archie J	April 2
White, James A	April 2
Ernstdorf, Arthur R	April 4
Holden, Vernon A	April 4
Storey, N. C	April 4
Bowers, Harry C	April 6
Boyer, Charles S	April 6
Calvert, Frederick G	April 6
Decker, Chester W	April 6
Newnham, William H	April 6
Phoenix, Jesse H	April 6
Thom, William M	April 6
Brown, Elliot F	April 8
Richardson, Steve F	April 8
Farmer, Luke H	April 9
Lowe, Euclid J	April 9
Barrett, James W	April 10
Bernson, Jacob	April 10
Brown, Thomas E., Jr	April 10
Hostetter, Morris B	April 10
Kidhle, Fred E	April 10
McPherson, Clinton N	April 10
Parsons, John C	April 10
Poore, Walter C	April 10
Potts, George H	April 10
Souder, Samuel R	April 10
Spangler, George D	April 10
Waid, Elbert S	April 10
Walters, Oscar G	April 10
Wilber, Delbert H	April 10
Hobby, William R	April 12
Bargerstock, Ord	April 14
Bolen, William H	April 14
Bruck, Harry W	April 14
Bruck, Harry W	April 14
Flaherty, Michael	April 14
Levy, Nathan L	April 14
Marshall, Cary B	April 14
Scholz, Ernest	April 14
Ware, Benjamin W	April 14
Nolan, Alphonsus P	April 17
Arden, John W	April 18
Ewing, Homer L	April 18
Bevington, Harry W	April 20
Bullard, Chester M	April 20
Decker, Elizabeth	April 20
Eberenz, Alexander	April 20
Fahr, Clarence W	April 20
Garver, John A	April 20
Greenman, Norton E	April 20
Hahn, John G	April 20
Kindred, Thomas E	April 20
MacDonald, Daniel J	April 20
Smith, William E	April 20
Stratton, Henry S	April 20
Bethauser, Charles W	April 23
Curran, William F	April 23
George, James S	April 23
Hayes, Frank C	April 23
Mansberger, James E	April 23
Pinsoneault, Wilmer D	April 23
Polak, Samuel	April 23
Proctor, Alman R	April 23
Hall, William	April 25
McGovern, Thomas	April 25
Vannah, Wilbert I	April 26
Muhlherr, Herman	April 27
Du Jardin, John W	April 29
Brown, William T	April 30
Edwards, George S	April 30
Reisinger, Carl L	April 30
Van Deventer, Martha	April 30
Lawler, John M	May 1
Melgord, Julius J	May 3
Ebdon, Thomas J	May 4
Johnson, August	May 5
Connor, Roland C	May 6
Dorsey, William B	May 6
Fetters, William	May 6
Freeland, William K	May 6
Jarboe, James H	May 6
Seewald, Roscoe S	May 6
Carroll, William H	May 7
Cushman, Charles T	May 8
Grover, Edgar L	May 8
McCullough, Andrew L	May 8
Reilly, Charles J	May 8
Vogan, George H	May 8
Walker, Patrick	May 10
Bromley, John Z	May 13
Byrnes, Lewis A	May 13
Drake, Theodore M	May 13
Edwall, Alfred	May 13
Howe, William G	May 13
Hudson, Henry H	May 13
Jones, George A	May 13
Naylor, Andrew N	May 13
Clause, Fred W	May 17
Davis, Grace H	May 17
DeMoll, Theodore G	May 17
Duckworth, George E	May 17
Durfee, Oscar S	May 17
Gowan, William R	May 17
Hayes, Ernest E	May 17
Materson, William E	May 17
Moriarty, John H	May 17
Perry, Lewis E	May 17
Snedeker, Cartie C	May 17
Williamson, Sydney B	May 17
Womack, Benjamin F	May 17
Wuelper, Adolph F. C	May 17
Sommers, Fred C	May 19
Sasse, David	May 20
Houston, Robert S	May 21
King, Richard A	May 21
Jerry, Carl R	May 22
Fulford, Louis	May 23
Green, Eustace C	May 23
Maher, John	May 23
Murphy, Edward M	May 23
Strock, James R	May 23
Schaff, Alfred	May 25
Schreiber, Henry G. E	May 28
Jordan, John P	May 29
Clements, John H	May 30
Daleen, Carl J	May 30
Engberson, Leo B	May 30
Fox, Egbert G	May 30
Hamlin, Frank T	May 30
Hill, Charles W	May 30
Howell, Robert	May 30
McIntyre, W. M	May 30
Medinger, F. O	May 30
O'Day, William	May 30
Pearman, Fred E	May 30
Smith, Mark D	May 30
Stanton, J. M	May 30
Williams, Henry	May 30
Willman, Arthur E	May 30
Boutty, James J	June 1
Jones, John W	June 1
Petrikin, Malcolm C	June 2
Ardern, LeRoy H	June 3
Bain, Wallace C	June 3
Boone, Edward L	June 3
Campbell, William S	June 3
Ellenwood, William E	June 3
Eppley, Calvin D	June 3
Holzapfel, August F	June 3
Kozak, Otto	June 3
Lindsay, Courtenay T	June 3
Quinn, Patrick J	June 3
Smith, Nello B	June 3
Standifer, Walter S	June 3
Varenkamp, Robert	June 3
Yocom, B. Thomas	June 3
Evans, Joe A	June 4
Perrin, James H. E	June 4
Von der Lieth, Theodore R.	June 4
Waterworth, Charles E	June 5
Flint, Frank B	June 6
Walling, Wilbur E	June 7
Benson, Maynard	June 8
Besley, R. Earl	June 8
Daniels, William L	June 8
Everist, Alva C	June 8
Finch, Ernest V. L	June 8
Goolsby, Elbert M	June 8
Johnson, George A	June 8
Martin, George W	June 8
Yeiser, Carl	June 8
Brown, Maurice G	June 11
Foster, Clifford M	June 11
Anderson, Charles H	June 13
Briggs, C. Bernard	June 13
Cornish, Lorenzo D	June 13
Gwartney, David C	June 13
Hayes, Oscar E	June 13
Helms, John L	June 13
Morris, Charles L	June 13
Pike, Earl R	June 13
Tucker, Herman F	June 13
Daley, James	June 17
Conlin, Carl	June 18
Rich, Elizabeth	June 18
Davis, John I	June 19
Davis, Hugh W	June 20
Greening, Peter	June 20
Pearson, Herbert	June 20
Pode, Stephen H	June 20
Ruby, Clyde K	June 20
Barnes, Charles W	June 21
Deming, Walter W	June 25
Downes, William	June 25
Dubois, William	June 25
Nelson, John F	June 25
Shepard, Harry P	June 25
Mitchell, Michael	June 27
Cooper, Gilbert K	June 28
Davis, John M	June 29
Ford, William H	June 29
Hall, Quincy A	June 29
Kittell, Julius C	June 29
Lester, Henry J	June 29
McGillicuddy, Cornelius J.	June 29

CARGO HANDLING.

Report on Method to be Used at Canal Terminals.

The committee on cargo handling facilities at the Atlantic and Pacific entrances to the Canal has made the report published below. The report is based upon projects already approved for wharves and piers at the two entrances.

At the Atlantic entrance the project provides for two docks or quay walls on Cristobal Point, and a number of piers jutting out into the ship basin from a mole now in process of construction. It is intended to build at present only the two docks, a part of the mole and one pier, leaving the remainder of the work to be executed as the need for it shall develop. All the docks are of reinforced concrete built upon caissons, and work is in progress on those that are to be constructed at once, Docks 15 and 16 and Pier 17. Dock 15 runs along the south side of Cristobal Point, and joins with Dock 16, which runs along the west side. Pier 17 juts out from the mole parallel with Dock 16, and 400 feet west or towards the Canal entrance, which, at the angle they are to one another, gives a least space between the dock and the pier of 300 feet for the berthing of ships. Dock 15 will be 500 feet long, and Dock 16 and Pier 17 1,100 feet long. The project for Pier 17, on which work has been advancing, provided for a width of 155 feet, which has been changed to 209 feet.

At the Pacific entrance the project is for a quay wall or wharf in two sections, a total length of 3,235 feet extending along the channel of the Rio Grande from a point near the present Marine Shops at Balboa, In addition to 1,860 feet at the dry dock. Construction is in progress on this quay, and a section 656 feet long is already completed. It is 56 feet wide and built of reinforced concrete on caissons. Dredging is in progress on a basin in front of the wharf. A project for a series of piers similar to those at the Atlantic entrance is under consideration.

The report follows:

From its understanding of the necessities and of the general practice elsewhere, the committee believes that it will be advisable to increase the width of piers, which was first tentatively fixed at about 150 feet, by about one-third, and recommends:

(1) That the width of the new piers at the Atlantic entrance of the Canal, including Pier 17, shall be increased by two spans, giving them a total out-width of 209 feet more or less, and the committee further recommends that the width of the new piers to be built at the Pacific terminal shall be as nearly the same as of those on the Atlantic side as the details of design will permit. It is recommended that each pier be provided with four railroad tracks running full length, two of the tracks to be sunken, or depressed, tracks in the center of the pier, and the other two tracks to be apron tracks, at the floor-level, one along each face of the pier.

So far as Dock 16 at Cristobal is concerned, the construction of which has already started, the committee recommends:

(2) That there be no change in the width already fixed of 75 feet 6 inches over-all, exclusive of the depressed tracks. The committee recommends one apron track at floor-level along the face of Dock 16.

SUPERSTRUCTURE.

The committee recommends:

(3) That the pier sheds shall cover the entire width of piers less not less than 18 feet along each face and at the end of the pier; the ends of buildings to be parallel to the ends of the piers; the pier-sheds to be one story with a clear height of not less than 25 feet from the floor of the pier to the bottom chord of the roof truss; the pier sheds to be provided with a horizontal, longitudinal girder on each side of the building, elevated to the proper height above the eaves, for attaching blocks to be used in unloading cargo; the pier-sheds to be of fire-proof construction—either reinforced concrete or steel completely incased in concrete.

The foregoing is intended to apply to pier-sheds at both termini of the Canal. For Dock 16 at Cristobal, the committee recommends:

(4) That the distance from the outside face of the dock to the outside of the dock shed shall be not less than 18 feet, shed to span the two depressed tracks, which will give a width out to out of dock shed of from 80 to 84 feet; the dock shed to be one-story having clear height of not less than 25 feet with a longitudinal girder along the water face the same as the pier sheds. The number of interior columns in the pier and dock sheds to be the minimum consistent with proper economy and the materials of construction used.

At Balboa, it is recommended:

(5) That the quay wall adjacent to the shops and dry dock be not provided with sheds.

CARGO HANDLING APPLIANCES.

In regard to the matter of furnishing piers and docks with dock cranes and similar cargo handling appliances, the committee understands the present situation to be as follows:

(*a*) Upon the completion of the Canal, the freight received for distribution to various points on the Isthmus will be very small.

(*b*) The amount of freight which will break bulk at either terminus of the Canal for transhipment across the Isthmus by rail can resonably be expected to be almost negligible from economical considerations.

(*c*) The amount of freight which will break bulk at either terminus of the Canal for rehandling aboard other vessels is an unknown item and cannot be forecast at the present time with any reasonable degree of accuracy.

(*d*) The furnishing of a large number of cargo handling cranes and other appliances, costly not only to install but also to operate, should be avoided if possible, and especially if there is any doubt as to the future necessity and usefulness of the same.

(*e*) It is understood that the present time the construction at Cristobal and Balboa of one pier only at each place is contemplated.

Wherefore, the committee considers that it will be more conservative and economical to proceed with the construction of Pier 17 and Docks 15 and 16 at Cristobal and the one pier at Balboa together with docks adjacent to the shops, without making provision for any special cargo handling appliances, but adopting such design for the pier sheds as will leave sufficient width along the face of each pier to permit of the installation of tracks for any cranes the need of which may develop in the future. The committee further believes that if this policy, which it recommends, is adopted for the one pier at each terminal which it is proposed to construct, when the time comes when further construction is needed, the experience then at hand will indicate whether any change in this policy is advisable. The recommendations of the committee, if approved, would require all freight to be handled by the vessels' cargo booms, supplemented by the blocks attached to the longitudinal girders above the eaves of the sheds. Single pieces too heavy to be handled by the vessels' cargo booms, *i. e.*, over about 10 tons in weight, would be handled by floating crane boats. At Balboa, the situation is somewhat different on account of the greater range of tides and the type of vessels entering this port at present. The committee believes that this difference will be compensated for by the six new electric cranes under contract for the old French wharf at Balboa, supplemented by such of the present cranes as are serviceable, which the committee recommends shall be continued in service until further notice. The committee recommends that all transfer of freight in the pier sheds be made by either hand trucks or electric trucks depending upon the distance and other conditions, and the committee believes that if any transfers of freight between piers are necessary the same can be made either in standard-gauge cars or by electric trucks.

Very respectfully,

(Sgd.) H. F. HODGES, *Chairman.*
H. H. ROUSSEAU,
S. B. WILLIAMSON,
J. A. SMITH,
Members of Committee.

Money Order Business with Chihuahua, Mexico.

The Post Office Department in the United States has advised all postmasters of the suspension of postal money order business with the State of Chihuahua, Mexico, and has directed that no orders be issued payable at that place, nor orders paid which were issued there on and after February 14. This suspension of the postal money order business with the State of Chihuahua will apply to the issue of money orders in the Canal Zone for payment in that State, and to the payment of orders issued there and drawn on the Canal Zone.

Levelman and Transitman.

An examination of candidates for promotion to the positions of Levelman, and Transitman will be held at Culebra on Sunday, May 12, at 9 a. m.

Employes who desire to take the examination will please make application through the head of the department or division in which they are serving, to A. B. Nichols, Chairman of the Examining Board, Culebra.

Candidates attending the examination should bring with them tables of the circular functions, and triangles.

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of March, 1912, follows:

DESTINATION.	Number Cars.	Cubic Yards.
Pacific Division	2,366	39,858
Atlantic Division	440	9,090
Central Division	25	375
Civil Administration	1	25
Sanitary Department	2	50
Quartermaster's Department	5	125
Fortifications	47	1,081
Panama Railroad Company	8	184
Miscellaneous	14	350
Total	2,908	51,138

SOCIAL LIFE OF THE ZONE.

Memorial Day Committee.

Representatives of the following organizations were present at the meeting of the Memorial Day committee, held at Gorgona on Sunday afternoon, April 14: Army and Navy Union, United Spanish War Veterans, American Veterans of Foreign Service, Knights of Pythias, Uniform Rank, Odd Fellows, Rebekah Lodge No. 1, Red Men, Degree of Pocahontas, Royal Order of Moose, Pacific Masonic Club, and the Department of Police and Prisons.

It was decided to hold Memorial Services at both Mount Hope and Ancon on May 30. The arrangement of the entire program for the day was turned over to the five representatives of the military organizations present, who at once drew up a program, details of which will be made known later.

Rifle Match.

The Canal Zone Rifle Club held an informal shoot with the Marines stationed at Gamboa range on Sunday, April 14, in which the Marines were victors with a score of 1,472 to 1,408. It is planned to invite a team from the Marines to shoot a match at 200, 300, and 600 yards on the home range of the club at Pedro Miguel. The following scores were made in the match:

U. S. Marines.		C. Z. Rifle Club.	
Gormerly	174	Gill	170
Hadlow	170	Greene	165
Hasenbuler	168	John	161
Gebhart	166	Haynes	159
Powers	165	Walraven	158
Tripple	162	Bernson	157
Eaton	157	Ferris	153
Suthard	156	Rogers	144
Schmitt	154	Phoenix	141
Total	1,472	Total	1,408

United Spanish War Veterans.

The next meeting of Chagres Camp No. 2 will be held at Empire Lodge Hall on Sunday, April 28, at 3 p. m All veterans of the Spanish War are invited to attend.

Empire Minstrels at Ancon.

The Empire Minstrels, who have been giving entertainments at the various Commission Clubhouses during the past few weeks, will give an entertainment at the Ancon Lodge Hall on Saturday evening, April 27, under the auspices of the joint lodges of Ancon.

Magazines for Lepers.

Those desiring to send old magazines for the patients at the Palo Seco Leper Asylum, by whom they would be much appreciated, can do so by placing them on the hospital car on train No. 7 from Colon, addressed to Palo Seco Leper Asylum, care of Sanitary Inspector, Balboa, C. Z.

Women's Organizations.

The Gatun Woman's Club is raising money for the Federation fund by providing home made cakes to the restaurant of the Commission clubhouse. The cakes are given by the members, Saturday being special club cake day, and are sold over the counter in the restaurant.

The semi-monthly meetings of the Woman's Guild of St. Luke's Hospital Chapel, Ancon will be resumed on Tuesday, May 7. The meeting on the first Tuesday in each month will be held in Ancon Hall at 9.30 a. m., on the second Tuesday in each month at the home of a member, by invitation, at 3.30 p. m. Owing to the Easter week, the dates of the April meeting were changed. On Tuesday, April 9, the meeting was held at the home of Mrs. Darling at 3.30 p. m., and the second meeting was at Ancon Hall on April 23, at 9.30 a. m.

The Little Workers, Gorgona's girls' club, held an Easter sale on Saturday afternoon, April 6. They made about $10, which will be donated to the Federation fund.

The Ancon Study Club expects to complete its review of Greek life and history at its meeting on May 2. Following this the club has in view the study of the American novel, and later will take up a short course on the drama. Books may be taken from the library at any time, and persons outside of the club may draw books upon the payment of $1 gold, which will be returned upon discontinuance of the use of the library.

Church Work.

The Rev. Mr. Harvey, who has been in charge of the work at St. Paul's and the mission of St Mary at Empire, has been recalled to his parish in Reading, Pa. His place here will be taken by the Rev. Mr. Carson, who comes from Louisiana. He arrived on the Isthmus to hold his first services on April 21.

New pews have been installed in St. Paul's church, Panama, and a new organ, which was consecrated on Sunday evening, April 7. The additions to church furnishings represent the efforts of the congregation for the past year.

Obituary.

Nelson Kenison, an employe of the Mechanical Division, died at Ancon Hospital on April 15 as the result of injuries received in the car repair shop at Gorgona on April 13. He was working at a circular saw table upon which a piece of wood was being cut. After receiving the cut piece of wood, his helper attempted to return it to him when it was caught by the saw, jerked from the helper's hands, and thrown against Mr. Kenison striking him in the abdomen. Mr. Kenison, was sixty years of age and had been on the Isthmus four years. He is survived by his wife living at Empire.

Warm Weather.

The warmest weather of record on the Canal Zone since the American occupation has occurred during April. At Ancon on April 7 the thermometer registered 97 degrees Fahrenheit, at Culebra on April 17th 96 degrees, on April 18th 95.7 degrees. The previous high record was on March 7, 1912 at Ancon, 96.2 degrees; on April 15, 1909 at Culebra 94 degrees.

LABOR FORCE AND QUARTERS IN MARCH.

On March 27 there were 36,057 employes actually at work on the Canal and the Panama railroad, and of the number 30,084 were Canal employes. The gold force on the Canal work, composed almost entirely of white Americans, was 4,338. The total force at the close of March, 1911, was 35,806, and the Canal force, 28,850. The force report for March 27, follows:

DEPARTMENT	SILVER EMPLOYES.*														Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.								
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.				
Const'ct'n and Eng'r'ng.	4,341	12	14	228	757	2,819	4,082	659	123	580	5,107	2,577	†256		21,555	3,225	24,780
Civil Administration	192	..	..	2	4	25	......	......	...	.....	......	13	....		236	386	622
Sanitation	674	..	..	3	2	5	......	......	1	1	4	286	5		981	354	1,335
Quartermaster's	910	..	1	108	180	160	67	27	34	.....	31	749	‡9		2,276	201	2,477
Subsistence	682	..	..	2	.....	2	......	......	...	.....	......	......	....		686	53	739
Disbursements	7	..	..	....	.....	......	......	......	...	.....	......	......	....		7	25	32
Examinat'n of Accounts	5	..	..	....	...	......	......	......	...	.....	......	......	....		5	94	99
Total	6,811	12	15	343	943	3,011	4,149	656	158	581	5,142	3,675	270		25,746	4,338	30,084
Month previous	6 843	12	14	379	972	3,211	4,159	765	169	618	5,123	3,795	284		26,345	4,500	30,845

Panama railroad force 4,118; Panama railroad relocation force, 638; Panama railroad commissary force, 1,217. Total, 5,973. I. C C. force 30 084 Grand total, 36 057

*All wages specified are in gold †Includes 2 at 5 cents. ‡Includes 4 at 5 cents.

The force report for the Department of Construction and Engineering on March 27, was as follows:

DIVISION	SILVER EMPLOYES.*													Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents.	32 cents	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Chief Engineer	141	..	..	19	55	168	111	80	[illegible]	16	540	90	5	1,227	251	1,478
Mechanical	183	5	2	26	62	502	63	1	...	.....	950	22	9	1,825	722	2,547
Atlantic	1,772	6	10	90	309	836	1,1[illegible]8	167	...	85	981	293	39	5,756	757	6,513
Central	1,129	1	..	32	126	465	1,853	89	97	479	943	1,955	154	7,733	785	8,118
Pacific	1,116	..	2	61	205	848	[illegible]77	322	2	.....	1,693	217	†49	5,414	710	6,124
Total	4,341	12	14	228	757	2,819	4,082	659	123	580	5,107	2,577	256	21,555	3,225	24,780
Month previous	4,407	12	13	260	772	3,011	4,070	754	137	617	5,093	2,778	262	22,186	3,340	25,526

*All wages specified are in gold. †Includes 2 at 5 cents.

QUARTERS.

On April 1, there were 25,810 occupants of Commission quarters. Of these 9,411 were white Americans of whom 5,428 were men 2,061 were women, and 1,922 were children. There were 6,062 Europeans of the laborer class, of whom 5,424 were men, 267 women, and 371 children. There were 9,337 West Indian negroes, of whom 6,924 were men, 1,065 women, and 1,348 children. Included in the above were 300 Asiatics, and 134 Panamans.

OFFICIAL CIRCULARS.

Hot Bearings on Locomotives.

CULEBRA, C. Z., April 18, 1912.

CIRCULAR No. 439:

The following rules concerning hot bearings on locomotives are approved and issued for the guidance of all concerned:

1. When a hot bearing occurs on a locomotive the engineer in charge will report the fact in writing —at the first telegraph office if on the Panama Railroad, or the first yardmaster's office if on Commission tracks. This report will be transmitted at once by wire to the transportation official under whose jurisdiction the engine comes, and he, in turn, will notify a traveling engineer, who will make a prompt investigation of the reported hot bearing, with a view to determining and reporting the cause thereof.

2. In case it is found that the hot bearing is due to lack of proper care by the engineer the latter will be subject to the following discipline:

   (*a*) If the hot bearing has caused neither damage to equipment nor appreciable delay the engineer will be given a letter of reprimand.

   (*b*) If the hot bearing has caused damage to equipment or delay to the work, the engineer will be suspended for from one to five days, depending upon the amount of damage or delay.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Half-rate Mileage Books.

CULEBRA, C. Z., April 19, 1912.

CIRCULAR No. 420-C:

First-class half-rate mileage books will hereafter be sold to American negro employes on the silver roll. This modifies Paragraph 7 of Circular No. 420-A, dated December 18, 1911.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Ratings and Rates of Pay.

CULEBRA, C. Z., April 19, 1912.

CIRCULAR No. 229-A:

The following ratings are hereby established for "Engineer (Stationary)" employed as pumpmen, in addition to the rates of $40.00, $45.00 and $50.00 per month, at present prescribed by Circular No. 229:

$30.00 per month.
$35.00 per month.
$55.00 per month.
$60.00 per month.

These new rates are established with the understanding that the maximum rate of pay for West Indians shall be $50.00 per month.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Selling Price of Coal.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT.

The selling figures of coal effective April 1, 1912, are as follows:

At Colon.

I. C. C., on cars, lighters, tugs, barges, etc	$4.34
U. S. Warships and Warships of the Republic of Panama, on cars	5.94
U. S. Warships and Warships of R. of P., alongside in lighters	6.94
Other Warships and steamers, delivered on cars	6.69
Other Warships and steamers, delivered alongside in lighters	7.69
Parties taking carload lots	6.29
Parties taking small quantities for cars in bins	$7.69

At Panama.

U. S. and Panaman Warships, alongside in lighters	8.44
P.M.S.S. Co., delivered to their lighters from cars	7.44
P.M.S.S. Co., on cars on dock	7.44
C.A.S.S. Co., on cars on dock	7.44
C.A.S.S. Co., lightered on P.R.R. lighters	8.44
P.S.N. Co., delivered to their lighters from cars	7.44
P.S.N. Co., on cars on dock	7.44
C.S.A. de V., on cars on dock	7.44
C.S.A. de V., lightered on P.R.R. lighters	8.44
Kosmos Line, on cars on dock	8.19
Kosmos Line, lightered on P.R.R. lighters	9.19
Other Warships and irregular steamers, alongside in lighters	9.19
Parties taking carload lots	7.64
Parties taking less than one carload at a time on cars	9.19
Santo Tomas Hospital, Panama	6.29

Miscellaneous.

U. S. Marine Corps (Camp Elliott)	7.19

SUPPLEMENT NO. 1 TO COAL TARIFF EFFECTIVE APRIL 1, 1912.

The following prices will be charged on 27,000 tons of coal in order to reimburse this company for extra cost of this amount of coal over and above contract prices as per tariff in effect April 1, 1912:

At Colon.

I.C.C. on cars, lighters, tugs, barges, stc	$5.27
U.S. and R. of P. Warships, on cars	6.87
U.S. and R. of P. Warships, alongside in lighters	7.87
Other Warships and steamers, delivered on cars	7.62
Other Warships and steamers, delivered alongside in lighters	8.62
Parties taking carload lots	7.22
Parties taking small quantities from cars or bins	8.62

At Panama.

U.S. and Panaman Warships, alongside in lighters	9.37
P.M.S.S. Co., delivered to their lighters from cars	8.37
P.M.S.S. Co., on cars on dock	8.37
C.A.S.S. Co., on cars on dock	8.37
C.A.S.S. Co., lightered on P.R.R. lighters	9.37
P.S.N. Co., delivered to their lighters from cars	8.37
P.S.N. Co., on cars on dock	8.37
C.S.A. de V., on cars on dock	8.37
C.S.A. de V., lightered on P.R.R. lighters	9.37
Kosmos Line, on cars on dock	9.12
Kosmos Line, lightered on P.R.R. lighters	10.12
Other Warships and irregular steamers, along-in lighters	10.12
Parties taking carload lots	8.57
Parties taking less than one carload at a time on cars	10.12
Santo Tomas Hospital, Panama	7.22

Miscellaneous.

U. S. Marine Corps (Camp Elliott)	8.12

J. A. SMITH, *General Superintendent.*

Privilege of Cutting Timber.

OFFICE OF THE CHIEF QUARTERMASTER,
CULEBRA, C. Z., April 13, 1912.

Sealed proposals will be received at this office until 3 p. m., Tuesday, April 30, 1912, and then opened, for the privilege of cutting and removing timber from the area within the Canal Zone that will be flooded by the Gatun Lake. Conditions governing privilege can be had upon application to this office or at the office of any District Quartermaster. Bids should be marked "Proposal for Cutting Timber", and addressed to Col. C. A. DEVOL, Chief Quartermaster, Culebra, C. Z.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending April 20:

Colon, April 14, from New York, with 16 cases electrical material, 13 crates rubber hose, 28 cases pulley blocks, for Atlantic Division; 30 kegs brake shoe pins, 95 bundles car springs, 21 bundles car castings, for Mechanical Division; 43 bundles crane parts, for Panama Railroad Company; 16 packages concrete mixers, for Superintendent of Erection; 56 cases drugs and sundries, 40 cases wrapping paper, for Sanitary Department; 24 cases rubber hose, 42 cases ink, 11 cases lead bends, 125 cases air brake material, 10 cases brass tubes and hose, 7 cases leather, 10 cases paint, 84 cases lanterns, 36 cases lantern globes, 15 cases chisels, 10 cases hammers, 34 cases paper, 10 cases bushings, 322 cases rivets, 90 coils manila rope, 30 cases shellac, 28 hales excelsior, 50 packages range parts, for stock; and a miscellaneous cargo, the whole consisting of 1,500 packages, weighing 200 tons.

Prinz Joachim, April 15, from New York, with 50 bundles bars and angles, 297 pieces bars and angles, for Mechanical Division; 258 pieces beams and angles, 30 bales oakum, for stock.

Karen, April 16, from New Orleans, with 60 pieces piling, 16,175 pieces lumber, 2,290 pieces lumber, for stock; 1,382 pieces lumber, for Mechanical Division.

Almirante, April 18, from New York, with 12,400 pieces hollow tile, for Panama Railroad Company; 4,468 pieces lumber, for Mechanical Division; 26 rolls mesh wire, for Pacific Division; 12 pieces steel beams, 175 cases water coolers, for stock.

Riverside, April 18, from Portland, Ore., with 77,495 pieces lumber, for stock.

Ancon, April 18, from New York, with 123,232 bags cement, for Atlantic and Pacific Divisions; 125 pieces car couplers, 50 pieces lumber, for Mechanical Division, 12 cases hardware, for stock.

Abangarez, April 18, from New Orleans, with 3,213 pieces lumber, for Mechanical Division; 77 pieces piling, 1,959 pieces lumber, 33 rolls cotton duck, 6 cases paste, for stock.

Tricolor, April 19, from Seattle, with 2,000 sacks oats, 197 pieces piling, 4,558 pieces lumber, for stock; 4 pieces spud timbers, for Atlantic Division.

Whitefield, April 19, from Baltimore, with 16 barrels paint, 40 cases paint, 700 kegs bolts, for stock; 1,453 pieces steel plates, for Panama Railroad Company; 143,947 pieces vitrified tile, for Atlantic Division; 55,009 pieces vitrified tile, 4,855 bundles steel bars, 3,120 pieces steel bars, for Pacific Division; 300 tons pig iron, for Mechanical Division.

Jacob Bright, April 19, from Fernandina, with 41,236 pieces cross ties, for stock.

Advance, April 20, from New York, with 6 cases dredging sleeves, for Atlantic Division; 14,330 pieces hollow tile, for Panama Railroad Company; 50 pieces castings, 10 cases brake shoes, for Mechanical Division; 34 cases lamp chimneys, 10 cases stationery, 33 cases pipe fittings, 50 cases varnish, 13 cases mining machinery, 24 cases picks, 200 coils soft steel wire, 100 cases paint, 54 cases salt water soap, 17 cases candles, 24 bundles steamshovel parts, 11 crates butcher blocks, 9 cases enamel ware, for stock; and a miscellaneous cargo, the whole consisting of 1,562 packages, weighing 235 tons.

Misdirected Letters.

ANCON, C. Z., April 22, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Briggs, Frank
Crist, Clement
Cody, M. J.
Conlan, Miss Lillian
Cook, H. T.
Corwin, Dexte
Cotter, John A.
Cousins, William
Duncan, F. R.
Elsworth, Mr. De Witt
Frank, Henry L.
Frick, Jas. C.
Hanson, R. W.
Hollar, W. J.
Lowry, Robert
Lynch, Dr. R.
McCracken, Ray
Millikan, Redgmon T.
Moon, Miss Minnie
Moore, Ed.
Morrison, A.
Nenton, Miss Essie
Northam, J. S.
Oxford, Sam
Saunders, W. F.
Sausman, Geo.
Seiver, Howard M.
Smith, Robt.
Snyder, R. M.
Stumpf, George
Thomas, T.
Underwood, Mrs. Rox
Vennessee, Mrs. Annie
Walker, Miss Nannie
Wood, Geo. C.

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to February 29, 1912, follows:

PERIODS.	Department of Civil Administration	Department of Law	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total
To June 30, 1909	3,427,090.29	...	9,673,539.28	69,622,561.42	78,022,606.10	...	160,745,797.09
Fiscal year, 1910	709,351.37	...	1,803,040.95	26,300,167.05	2,863,088.83	...	31,675,648.20
Fiscal year, 1911	755,079.44	...	1,717,792.62	27,477,776.19	3,097,959.72	...	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,089,361.82	312,920.11	...	2,615,340.33
August, 1911	74,768.45	1,878.27	156,954.79	2,287,506.30	355,087.42	86,243.14	2,962,438.37
September, 1911	64,905.24	1,805.83	146,912.23	2,212,702.66	234,233.58	86,275.56	2,746,835.10
October, 1911	64,143.49	1,586.71	152,252.71	2,751,377.24	323,154.80	32,061.45	3,324,576.40
November, 1911	66,491.92	2,502.39	138,404.22	2,346,719.44	200,614.00	93,952.56	2,848,684.53
December, 1911	66,013.49	1,854.62	143,745.59	2,467,291.16	316,891.32	60,794.07	3,056,590.25
January, 1912	74,737.19	2,581.53	114,637 59	2,228,910.21	451,899.54	148,983.75	3,021,749.81
February, 1911	71,769.71	2,330.07	115,308.91	2,326,058.48	249,658.11	73,488.96	2,838,614.24
Total	5,447,245.81	17,066.77	14,300,224.72	142,110,431.97	86,428,113.53	581,799.49	248,884,882.29

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving picture entertainments for the week April 29 to May 4, is as follows: Monday, Empire; Tuesday, Cristobal; Wednesday, Culebra; Thursday, Gorgona; Friday, Corozal; Saturday; Gatun.

The standing in the pool and billiard tournament is as follows:

Pool.

Team.	Won.	Lost.	P. C.
Gatun	13	3	.813
Corozal	10	6	.625
Empire	9	7	.563
Gorgona	5	11	.313
Cristobal	3	13	.188

Billiords.

Team.	Won.	Lost.	P. C.
Culebra	4	0	1.000
Corozal	3	1	.750
Gatun	4	2	.666
Empire	5	3	.625
Cristobal	2	6	.250
Gorgona	0	6	000

COROZAL.

Gatun will play indoor baseball at Corozal on Saturday night, April 27.

The Hill Magical Company is scheduled to appear at the clubhouse on Tuesday night, April 30.

On Saturday night the Corozal billiard team won and lost one game to the Empire team. Results: Wood of Empire 100; White of Corozal 43. Thompson of Corozal 100; Barnes of Empire 93. Corozal won five out of the eight games of pool played. The results were as follows: *Corozol*—Logfren, 100; Wilson, 91, 93; Tribolet, 100, 53; Baker, 100, 100; Lofgren, 100. *Empire*—McCulloh, 53; Pearson, 100, 100; Earle, 98, 100; McKeever, 82, 65; Earle, 68.

CULEBRA.

The following is the result of the duckpin bowling at Culebra on Saturday between Empire and Culebra:

Culebra.				Empire.			
Crain	92	81	86	Penny	94	84	91
Wheeler	88	87	71	Nelson	94	84	91
Brown	91	79	67	Dannelson	92	92	93
Sterns	89	79	94	L. Gevelli	78	91	114
Palmer	92	112	91	Gustaveson	114	88	70
Total	452	438	409		470	444	456

On Saturday evening the Gorgona bowling team will bowl against Culebra on the bome alleys. All Culebra people are invited to come out.

High scores for the week, in duckpins were as follows: Silver, 100; Palmer, 112; Judge, 102; Case, 100.

EMPIRE.

The following high scores were bowled on the alleys during the week: *Duckpins*—Rodeighiro, 101, 102, 106, 104; Pinney, 109; Goolsby, 105; Nelson, 116; L. Giavolli, 100; Pulsifer, 111; Grant, 100; Davis, 100; Dakin, 106.

The results of the bowling games between Culebra and Empire on Saturday night, April 20 were as follows:

Empire.				Culebra.			
H. King	84	72	89	Mengle	71	84	85
Grund	74	81	88	Silver	91	76	85
N. Giavolli	102	95	81	Hill	70	95	87
Goolsby	79	78	93	Corn'waite	77	83	78
Rodeighiro	100	72	99	Case	94	90	99
Total	439	399	450		403	428	434

The return engagement of the Empire Minstrels will be on Tuesday, April 30.

GORGONA.

The following high scores were rolled on the Gorgona bowling alleys in duckpins from April 1 to 15: Dunlop, 101, 101, 109; Davis, 101, 115, 102; Berglund, 101, 108, 109; Deihl, 105, 107, 104; Anderson, 109, 107, 103; Simka, 101, 106, 103; Otis, 108, 102, 104; Bishop, 104, 110, 107; Powell, 100, 102; Miller, 100, 102, 107; Denst, 105, 110, 103; Lowande, 109, 103, 106; M. Varenkamp, 100, 110, 102.

The following games were rolled between Cristobal and Gorgona on Saturday night, April 20 in the duckpin league:

Gorgona.				Cristobal.			
Seebt	86	102	99	Barrett	98	90	78
Robertson	76	98	75	Weston	88	101	95
Powell	77	81	101	Orr	85	95	79
Anderson	78	89	71	Smith	83	94	90
Otis	102	96	91	Jacques	85	86	86
Total	419	466	437		439	466	428

The following billiard games were played on Saturday night, April 20 with Culebra: *Culebra*—Conlon, 100; Tragsdorf, 100. *Gorgono*—Berman, 55; Berman, 71.

The Gorgona Discussion Club has elected the following officers: Chairman, H. O. Levering; Vice Chairman, W. L. Robinson; Secretary, C. Patterson. A program committee of three was appointed, Messrs. Morrison, Boyer, Hosden. The debate for Monday, April 22, was "Resolved, That Mr. Taft is Entitled to a Second Nomination by the Republican Party;" Affirmative, Messrs. Swanson, Carruthers; Negative, Messrs. Morrison, Grossberg. The next discussion, Monday, April 29, will be "Resolved, That the United States Government Should Interfere in the Mexican Situation."

GATUN.

The Sunday evening discussion club discussed on April 21 "Woman and the Home."

Following are the results of the games of Isthmian Pool and Billiard Tournament played at Gatun on Saturday evening, April 20: *Pool*—Gatun—DePoorter 100; Galloway, 100; Dalton, 100; Hughes, 100. *Cristobol*—Bernsee, 45; Ford, 73; Montgomery, 77; Louch, 47. *Billiords—Gotun*—Townsley, 100; Wurster, 98. *Cristobal*—Rice, 91; Pack, 100. High runs in pool were made by Hughes, 26; DePoorter, 21.

Gatun lost two out of three games of bowling with Camp Elliott on Saturday evening, April 20. The result:

Gatun	459	442	411	C. Elliott	417	449	431

Professor Gomez announces that if there are at least five women interested, he will start a beginners' class in Spanish on Tuesdays and Thursdays of each week from 1.30 to 2.30 p. m.

Mrs. McLeod will play two violin solos on Friday, April 26 at the moving picture entertainment.

Culebra won the indoor baseball game from Gatun on Friday evening, April 19, by the score of 33 to 7.

The results of the bowling games in the local bowling tournament for the week ending April 20 are as follows:

Stars	2	Lucky Strikes	1
Sure Shots	2	All Malts	1
Algonquins	2	Beavers	1

Empire will play pool and billiards at Gatun, on April 27. Empire bowls at Gatun on the same evening.

A German orchestra will give a concert at Gatun on Monday, April 29. If the weather permits the concert will be outside in the band stand.

A handsome cue will be given the man who obtains the ten highest runs in pool during the month of April.

Tuesday and Thursday afternoons have been set aside on which the ladies of Gatun are invited to use the privileges of the clubhouse.

CRISTOBAL.

The indoor baseball team of Gorgona defeated the Cristobal team on the local floor on Saturday evening, April 20, by a score of 14 to 6.

The next session of the debating club will be held on Wednesday evening, May 1. The topic for discussion will be announced by bulletin.

The Cristobal duckpin team won all three games from the Gorgona team on the local alleys on Saturday evening, April 20. The Cristobal team which went to Gorgona secured two out of three games.

Fifty-one new books have been added to the library.

On Saturday evening, April 27, the duckpin bowling team from Camp Elliott will bowl the Cristobal team on the local alleys.

Mr. F. L. Bernsee, the champion checker player of the Isthmus, met nineteen players on Thursday evening, April 18, in simultaneous checkers, winning 49 games, losing one and making three draws. Mr. Burns drew one game and Mr. Gartell two. Mr. Putnam won one game.

FOUND—In the reception room at the nurses' home, Colon Hospital, on Monday evening, a scarf pin which may be had on application to the Superintendent's office, Colon Hospital, upon proper identification.

PANAMA CANAL BASEBALL LEAGUE.

RESULT OF GAMES, APRIL 21.

At Ancon—Ancon, 10; Empire, 0.

At Empire—Com.-Sub., 15; 10th Infantry, 1.

STANDING OF CLUBS.

	P.	W.	L.	P.C.		P.	W.	L.	P.C.
Com.-Sub.	15	11	4	.733	Empire	14	7	7	.500
Ancon	16	10	6	.625	10th In'ty.	15	3	12	.200

The games played on April 21, have been declared the last of the league season, although games are scheduled up to June 30. The pennant has been awarded to the Commissary-Subsistence team.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Culebra, C. Z., Sunday, April 28, 1912, at 5.45 p. m. The program follows:

1. March—*Boys of the Militia*............Boehnlein
2. Selection—*The Girl in the Train*............Fall
3. Polish Dance—*Kuyowiok*...........Wieniawski
4. Overture—*William Tell*.................Rossini
5. A Melody—*Wild Rosebud*...............Tobani
6. Mazurka—*La Czarine*..................Canne
7. Descriptive—*The Rocket at Gilligan's*......DeWitt

   Synopsis—The guests gather at Gilligan's: after their arrival Gilligan sings a song, which is followed by a country dance; the star singer then renders a touching ballad, after which the bagpipes strike up. "Are ye's all ready?" shouts Gilligan. "Yis." "Then fire away." A regular "welt the floor" and "slip time" follows, a sand jig comes next, and the festivities close with all singing "Saint Patrick's Day in the Morning."
8. Medley Selection—*Popular Hits*.........Schultz
9. March—*Everybody's Doing It Now*........Berlin

The next concert will be given at Pedro Miguel, May 4, at 4.30 p. m.

Family Quarters.

Applications for married quarters on file for April 1, were as follows:

DISTRICT.	List No 1.	List No. 2.
Ancon	8 (2)	63 (15)
Ancon Hospital	....	5 (1)
Balboa	....	33 (8)
Bas Obispo	....	40
Corozal	....	64 (15)
Cristobal	1	145 (2)
Culebra	7 (1)	45 (1)
Empire	....	91 (27)
Gatun	....	98 (24)
Gorgona	5	84 (33)
Las Cascadas	....	33 (1)
Pedro Miguel	2 (1)	45 (11)
Porto Bello	....	11 (9)
Toro Point	1 (1)	5 (2)
Totals	24 (5)	762(149)

NOTE—The figures in parenthesis show the number of applicants already occupying regular or non-housekeeping family quarters at stations other than those at which applications are filed.

Married.

FARRAR-SWAB—On March 30, at the home of the bride's parents in Empire, Miss Mora A. Swab to Mr. Oliver S. Farrar of Balboa, the Rev. A. A. Nellis officiating. Canal Zone residence, Balboa.

WILLIS-WERTZ—On April 21, at the home of the bride's parents in Empire, Miss Nellie Louise Wertz to Mr. Willard G. Willis, the Rev. A. A. Nellis officiating. Canal Zone residence, Empire.

LOST—At the University Club, Panama, on the night of April 20, a French lace shawl. Finder is requested to communicate with Ad. Faure, Culebra.

WEATHER CONDITIONS, CANAL ZONE, MARCH, 1912.

The weather for the month as a whole continued unusually warm, dry and windy. There was a marked deficiency in rainfall at all stations, the average fall over the Isthmus being about 15 per cent of the March normal, and the lightest of record for any month during the past six years.

The average temperature and wind movement were the highest of record for the month of March, the maximum temperature of 96.2° F. at Ancon on the 7th being a fractional part of one degree higher than the highest previously recorded at any station in the Canal Zone.

The mean relative humidity was uniform over the Isthmus but slightly below normal, while normal conditions of cloudiness prevailed.

Weather conditions were again favorable for a high rate of evaporation.

Fogs—The few fogs observed during the month were of short duration and light density; 77 per cent were dissipated by 6.30 a. m., 96 per cent by 7.30 a. m., and 100 per cent by 8.30 a. m.

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date	Minimum.	Date.		Total inches.	Station average.	Number of rainy days	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon	29.882	82.4	88	Mar. 29	76	Mar. 11	79	.63	1.67	11	12,550	N.	33	N.E.	Mar. 5
Culebra	29.854	83.4	92	Mar. 7	68	Mar. 12	79	.02	.68	1	8,894	N.W.	35	N.	Mar. 4
Ancon	29.844	83.0	96	Mar. 7	69	Mar. 12	77	.01	.73	1	8,965	N.W.	30	N.W.	Mar. 1

COMMISSARY DEPARTMENT

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m

Retail prices of cold storage provisions for the week beginning April 22, 1912.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	†18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Plate, per lb.	9
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24
Venison (Imported), Stew, per pound	.12
Forequarter (not under 6½ pounds), per pound	.16
Rack (not under 5½ pounds), per pound	.27
Saddle (not under 7½ lbs.), per pound	.27
Leg (not under 9 pounds), per pound	.27
Chops, per pound	.28
Cutlets	.28

MISCELLANEOUS.	
Caviar, Russian in ½-lb. jars	89
Livers—Beef, per pound	7
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	17
Sweetbread—Beef, per pound	25
Eggs, fresh, dozen	26
one-half dozen only	14
Bluefish, per lb.	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	14
Fluke, fresh, per pound	10
Oysters, 1 quart, per box	40
Shads, fresh, each	90
Shad roes, fresh, pair	50

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 5½ pounds, each	1.10
Fancy roasting, corn fed, about 4½ pounds, each	.90
Fowls, each ††60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.25
Hens, milk fed, for roasting, about 3 pounds, each	50
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	23
Squabs, each	35
Capons, each	2.10
Ducks, teal, per pair	50
Ducks, Blackhead, pair	60
Partridges	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30

CURED AND PICKLED MEATS.	*Price.*
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Ham—Sugar cured, Half, for boiling, per pound.	21
Boiled, per pound	28
Hocks, per pound	‡8
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18

DAIRY PRODUCTS.	
Butter—Creamery special, per pound	35
Sheffield Farms, extra fancy, per lb.	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	†25
Swiss, per pound	28
Edam, each	1.00
Edam in tins, per tin	26
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**20
Fer-mil-lac, bottle	**20
Ice cream, quart	‡25
½-gallon	§50

VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	10
Cabbage, per pound	*5
Cucumbers, per pound	20
Carrots, per pound	3
Cauliflower, per pound	8
Egg Plant, per pound	10
Lettuce, per pound	†10
Onions, per pound	†6½
Onions, green, per bunch	5
Potatoes, white, per pound	3
sweet, per pound	2
Parsley, per pound	15
Parsnips, per pound	4
Squash	5
Spinach, per pound	10
Turnips, per pound	3
Tomatoes, per pound	10
Yams, per pound	3
Apples, per pound	6
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

††Fowls weigh each about as follows: 3, 3½, 4, 4½ and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight, is supplied and refund note sent for difference.

‡Sold only from commissaries; no orders taken for delivery.

§Sold only from cold storage and not from commissaries.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, April 20, 1912. All heights are in feet above mean sealevel.

Day and Date.	Station.				
	Vagia	Alhajuela	Gamboa	Bohio.	Gatun Lake
Sun., April 14	124.8	91.2	44.0	17.2	17.2
Mon., April 15	124.8	91.2	43.8	17.2	17.1
Tues., April 16	124.9	91.3	44.0	17.0	17.0
Wed., April 17	124.8	91.2	43.9	17.0	16.9
Thurs., April 18	124.6	91.0	43.8	16.9	16.9
Fri., April 19	124.6	91.0	43.7	16.8	16.8
Sat., April 20	124.6	91.0	43.7	16.7	16.7
Height of low water to the nearest foot	125.0	91.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending May 1, 1912 (75th meridian time):

Date.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
April 25	......	3.38	9.52	4.20	10.24
April 26	......	4.53	11.12	5.38	11.47
			P.M.		
April 27	......	6.06	12.24	6.46	.....
April 28	1.00	7.11	1.27	7.45	......
April 29	2.00	8.06	2.20	8.36	......
April 30	2.50	8.56	3.06	9.21	.....
May 1	3.35	9.40	3.47	10.04	......

The following ships arrived at or departed from the port of Balboa during the week ending April 20:

Arrivals—April 15, *Quilpue*, from Valparaiso; April 17, *Chile*, from Guayaquil; April 17, *Rupanco*, from Buenaventura; April 18, *Tricolor*, from north; April 18, *Riverside*, from San Francisco; April 20, *Pennsylvania*, from San Francisco.

Departures—April 15, *Santa Maria*, to Port Harford; April 15, *Mantaro*, to Callao; April 16, *City of Para*, to San Francisco; April 18, *Aysen*, to Valparaiso.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.				
Panama	P. R. R.	Saturday	April	20
Allianca	P. R. R.	Friday	April	26
Colon	P. R. R.	Thursday	May	2
Advance	P. R. R.	Thursday	May	9
Panama	P. R. R.	Wednesday	May	15
Allianca	P. R. R.	Tuesday	May	21
Colon	P. R. R.	Monday	May	27
Advance	P. R. R.	Monday	June	3
Panama	P. R. R.	Saturday	June	8
Allianca	P. R. R.	Friday	June	14
Colon	P. R. R.	Friday	June	21

CRISTOBAL TO NEW YORK				
Advance	P. R. R.	Friday	April	26
Ancon	P. R. R.	Sunday	April	28
Panama	P. R. R.	Friday	May	3
Allianca	P. R. R.	Thursday	May	9
Colon	P. R. R.	Wednesday	May	15
Advance	P. R. R.	Tuesday	May	21
Panama	P. R. R.	Monday	May	27
Allianca	P. R. R.	Sunday	June	2
Colon	P. R. R.	Sunday	June	9
Advance	P. R. R.	Saturday	June	15
Panama	P. R. R.	Friday	June	21

NEW YORK TO COLON.				
Santa Marta	U. F. C.	Wednesday	April	17
Turrialba	U. F. C.	Saturday	April	20
Prinz August Wilhelm	H.-A.	Saturday	April	20
Metapan	U. F. C.	Wednesday	April	24
Arcadian	R. M.	Saturday	April	27
Prinz Eitel Friedrich	H.-A.	Saturday	April	27
Tivives	U. F. C.	Saturday	April	27
Zacapa	U. F. C.	Wednesday	May	1
Sixaola	U. F. C.	Saturday	May	4
Prinz Joachim	H.-A.	Saturday	May	4
Almirante	U. F. C.	Wednesday	May	8
Tagus	R. M.	Saturday	May	11
Prinz Sigismund	H.-A.	Saturday	May	11
Carillo	U. F. C.	Saturday	May	11
Santa Marta	U. F. C.	Wednesday	May	15
Prinz August Wilhelm	H.-A.	Saturday	May	18
Turrialba	U. F. C.	Saturday	May	18
Oruba	R. M.	Saturday	May	25
Prinz Eitel Friedrich	H.-A.	Saturday	May	25

COLON TO NEW YORK.				
Almirante	U. F. C.	Thursday	April	25
Prinz Sigismund	H.-A.	Monday	April	29
Tagus	R. M.	Tuesday	April	30
Carrillo	U. F. C.	Tuesday	April	30
Santa Marta	U. F. C.	Thursday	May	2
Turrialba	U. F. C.	Tuesday	May	7
Prinz August Wilhelm	H.-A.	Tuesday	May	7
Metapan	U. F. C.	Thursday	May	9
Prinz Eitel Friedrich	H.-A.	Monday	May	13
Orotava	R. M.	Tuesday	May	14
Tivives	U. F. C.	Tuesday	May	14
Zacapa	U. F. C.	Thursday	May	16
Prinz Joachim	H.-A.	Tuesday	May	21
Prinz Sigismund	H.-A.	Monday	May	27
Thames	R. M.	Tuesday	May	28

NEW ORLEANS TO COLON.				
Atenas	U. F. C.	Saturday	April	20
Orleanian	U. F. C.	Wednesday	April	24
Parismina	U. F. C.	Saturday	April	27
Cartago	U. F. C.	Wednesday	May	1
Abangarez	U. F. C.	Saturday	May	4
Heredia	U. F. C.	Wednesday	May	8
Atenas	U. F. C.	Saturday	May	11

COLON TO NEW ORLEANS				
Abangarez	U. F. C.	Thursday	April	25
Heredia	U. F. C.	Thursday	April	25
Atenas	U. F. C.	Thursday	May	2
Orleanian	U. F. C.	Thursday	May	2
Parismina	U. F. C.	Thursday	May	9
Cartago	U. F. C.	Thursday	May	9

The Leyland Line steamship *Alexandrian* will sail for Port Limon and Mobile on or about May 1.

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

United Fruit Company's ships for New Orleans direct leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 2 p. m.; ships for New York via Kingston on Tuesdays at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, MAY 1, 1912. No. 36.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS

Pedro Miguel Dam.

In the construction of the dam at the upper end of Pedro Miguel Lock, on the west side, the principle of which is the enclosure of an impervious core of clay between two parallel toes of heavy rock, the toes have not been extended the entire distance from Cerro Luisa to the lock on account of the railway tracks which crossed the site of the dam in making connections with the mixing plants at the upper approach to the lock. These tracks have recently been removed, following the completion of connections along the west side and north end of the dam, and the extension of the toes to full length is under way. The portion yet to be built is about 150 yards long.

The dumping of clay between the portions of the toes already completed has brought the inner edges of the masses dumped from opposite sides together and the core will soon be built up until the top is about a hundred and five feet above sealevel. The clay is supplied by the four steamshovels which are excavating the Canal channel through the proposed Miraflores Lake. The material is dumped in the daytime and through the night it is sprayed with jets of water until it becomes mud and settles into an impermeable mass. The five jets are supplied from a $4\frac{1}{2}$-inch main, into which an air-driven pump forces water from a depression at the foot of the west backfill for the lock. The pump is kept in continuous operation and when the jets are not in use the water flows out at the upper end of the main, into the depression between the converging sides of the core, and furthers the work of solidification. About 478,000 cubic yards of filling have been placed in the dam up to this time.

Proposed Wireless Communication.

The Navy Department has determined upon a site for the high power wireless telegraph station to be maintained on the Canal Zone at a point half a mile northwest of Caimeto Junction and an equal distance east from the old site of the village of San Pablo. The site is from 60 to 110 feet above the normal level of Gatun Lake, accessible by means of the Panama railroad, and near to the electric transmission, and telegraph and telephone lines which will follow the right of way of the railroad. In addition to this high power station, which will be capable of communicating with points at a distance of three thousand miles, there will be stations of less power at Porto Bello, and Colon, where the Navy now maintains stations, and one at Balboa near the Pacific entrance to the Canal. The status of wireless telegraph communication on the Isthmus has been fixed by the President in accordance with the following recommendation of the Joint Board of the Army and Navy appointed for that purpose:

> That no private or commercial wireless installations be permitted in the Canal Zone.
>
> That an understanding be reached with Panama to prevent the establishment of private and commercial wireless installations in its territory.
>
> That the Navy Department shall have authority to install, maintain, and operate under its jurisdiction a high power wireless station in the Canal Zone to be used in connection with its other stations in the Atlantic and Pacific, and for controlling the movements of its fleets in waters adjacent to the Panama Canal.
>
> That wireless stations under the jurisdiction of the Navy Department shall be opened to the public service and shall transmit commercial business under such regulations as the President of the United States may prescribe.

A request upon the Congress for an appropriation of one million dollars for the purpose of establishing high power wireless stations, one in the Canal Zone, one on the California coast, one in the Hawaiian Islands, one in American Samoa, one on the Island of Guam, and one in the Philippines, was made by the Secretary of the Navy on March 12.

Excavation of Gravel from Chagres River.

Because of the danger of inundation of railway tracks by a rise of the Chagres River, the Central Division has discontinued dredging gravel from the bed of the river near Gamboa bridge, and has removed all track lying at an elevation of less than 50 feet above sealevel. Former practice has been to forego operations while the river was at its rainy season height, resuming when it had dropped to dry season flow. But as the height of the river at Gamboa. at low water, is 44 feet above sealevel and it is expected that the surface of Gatun Lake will be 50 feet above sealevel before the end of the coming rainy season the tracks could not have been recovered if the water had risen and covered them.

During the past dry season the Central Division operated 3 cranes equipped with orange peel buckets on this work and excavated 91,300 cubic yards of gravel. One of the cranes has been transferred to the Division of Fortifications, another has been engaged in the removal of track in the Chagres station, and the third has been put at work on drainage ditches in the Empire district of Culebra Cut. Most of the gravel excavated at this point during the past dry season has been deposited in a storage pile in the rear of the site of the new town of Gamboa, on the relocated line of the Panama railroad. It is to be used principally for ballasting tracks. though the proportion of sand in it is such that by combining 4 parts of it with one of cement an excellent concrete is obtained.

The Panama railroad is still operating two cranes, with orange peel buckets, in two pits along the edge of the river, half a mile and a mile and a half above Gamboa bridge. Gravel from these pits has been stored in a pile lying across the river from the Gamboa gauging station. About 115,000 cubic yards have been excavated from the two pits during the past season.

Atlantic Terminal Docks.

In the construction of the Cristobal terminal docks, the temporary trestle for the mole, from which the piers will extend toward the anchorage basin, has been built to its full length of 1,720 feet. The mole proper will consist of a fill 250 feet wide, rising to 10 feet above mean sealevel. The material for the fill is rock secured from borrow pits near Mount Hope. Docks 15 and 16 come together at an angle, enclosing Cristobal Point, Dock 15 being practically an extension of Dock 11.

The work of driving steel caissons for Dock 16, is 70 per cent complete; that is, 10,500 lineal feet are in place. It is expected that all caissons will be in place on this dock in three weeks' time. No attempt will be made to place caissons on Dock 15 on account of interfering with the work at the cement dock—Dock 11 extension. The work of placing caissons for Pier 17 is 35 per cent complete, with 6,000 lineal feet of caissons in place. The extension of this pier into deep water has been delayed on account of shortage of long piling.

The dredge *Mindi* started work excavating the slip between Dock 16 and Pier 17 on April 22. It is intended to have this dredge take one cut along the face line of Dock 16 to elevation 41 feet below mean sealevel. This first cut is largely a construction measure and will involve moving about 41,000 cubic yards. If the services of the dredge can be spared, the entire slip will be dredged to 41 feet, which involves moving 310,000 cubic yards.

Removal of Narrow Gage Track at Gatun Locks.

Following the dismantling of the auxiliary concrete mixing plant east of the upper end of Gatun Locks, and in anticipation of the removal of the railway tracks leading to the east approach at the upper end, on account of the construction of the east dam, the 3-foot gage tracks extending from the site of the mixing plant to the east forebay and to the cellular approach wall have been removed, and after a quantity of debris is

NOTES OF PROGRESS.

(Continued.)

cleared away the forebay will be ready for the inundation consequent upon the rise of Gatun Lake. After May 1 the service for carrying visitors through the locks on a sightseeing train traversing the east chambers will be discontinued. This track has no connections beyond the ends of the lock chambers and all of the material in it, as well as the cars and the 18-ton locomotive, will be recovered by the use of a wrecking crane, operating from the top of the east side wall. A portion of the track will be shifted from the center of the chamber to the base of the wall and, beginning at the ends, the track will be torn up and the material hauled on the train to a point convenient to the crane. When no track is left except the last bit at the base of the wall, the locomotive and cars will be drawn up, and clearing away the train-length of track on which they stood will complete the removal. Narrow gage track will still be used on the west side of the locks, where two locomotives are engaged in hauling concrete from the permanent mixing plant to the trestle beside the upper approach wall, and at the spillway, in the construction of the spillway dam and for the permanent hydro-electric plant.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 87 per cent completed, 196,937 cubic yards, out of a total of 225,000, having been placed at the close of work on April 27. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
April 22	188	5.30	2
April 23	116	5.45	1
April 24	132	7.30	1
April 25	108	5.30	1
April 26	84	5.00	2
April 27	84	5.00	1
Total	712	34.15	1.3
Previously reported	196,225		
Grand total	196,937		

Ancon Crusher.

A statement of the rock crushed at Ancon quarry during the week ending April 27, follows:

Date.	Hours worked.	Cubic Yards.
April 22	12.55	4,679
April 23	10.45	4,523
April 24	10.10	3,992
April 25	10.55	3,371
April 26	13.05	4,747
April 27	13.05	4,150
Total	70.55	25,462

Porto Bello Crusher.

Date.	Hours worked.	Cubic Yards.
April 22	4.05	1,676
April 23	4.10	1,914
April 24	3.25	1,786
April 25	4.05	1,920
April 26	4.30	1,944
April 27	3.50	1,926
	24.05	11,166

New Tug Schedule—Dock 13.

Effective May 2, tugs will leave Dock 13 for Toro Point at 6.15 a. m., and will arrive at Dock 13 on return trip at 9 a. m. Tugs for Toro Point and Porto Bello leave at 5 p. m., and arrive at Dock 13 on return trip at 5 a. m. The Saturday passenger tug for Porto Bello will run on the same schedule as heretofore.

PERSONAL.

Mr. John M. G. Watt returned on April 25 on the steamship *Atenas*, from his annual leave, which he spent in Honduras and Florida.

Col. W. C. Gorgas sailed for the States on the *Ancon* on April 28 on his annual leave.

Missing Men.

Any one having information regarding the whereabouts of John Bonner Boyle of Pittsburgh, Pa., who is supposed to be on the Isthmus of Panama, is requested to communicate with THE CANAL RECORD.

CONCRETE WORK IN THE LOCKS.

Over 83 per cent of the concrete for the locks is in place, the amount at the close of work on April 27 being 3,582,767½ cubic yards, out of a total of approximately 4,303,486. A total of 29,321½ cubic yards of concrete was laid in the locks during the week ending April 27.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on April 27 being 1,865,382½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending April 27, and of the total follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 22	316	5.16	2	....	....	......	....	349
April 23	332	5.30	3	....	....	......	....	386
April 24	300	3.36	3	....	....	......	....	336
April 25	246	4.08	3	....	....	......	....	262½
April 26	526	8.42	2	....	....	......	....	552
April 27	436	8.58	4	....	....	......	....	477
*Portable mixers	....	....	......	206½	....	......	....	....
Total	2,156	36.10	2.8	206½				2,362½
Previously reported	....	....	......	....	....	......	....	1,863,020
Grand total	....	....	......	....	....	......	....	1,865,382½

The 206½ yards placed by the portable mixer are reinforced concrete, and were placed on the following days: April 22nd, 33; April 23rd, 54; April 24th, 36; April 25th, 16½; April 26th, 26; April 27th, 41.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 93 per cent completed, 836,689 cubic yards, out of a total of 890,750, bucket measurement, having been placed at the close of work on April 27. The record for each of the six working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 22	252	6.25	1	171	15.00	3	....	423
April 23	284	7.00	1	90	8.00	1	....	374
April 24	156	4.00	1	106	10.50	2	....	262
April 25	170	4.25	1	116	11.00	3	....	286
April 26	106	2.75	1	213	28.00	5	....	319
April 27	210	5.25	1	247	24.00	5	....	457
Total	1,178	29.50	1	943	96.50	3.2	....	2,121
Previously reported	....	....	......	....	....	......	4,423	834,568
Grand total	....	....	......	....	....	......	4,423	836,689

MIRAFLORES LOCKS.

Over 62 per cent of the concrete for the system of two twin locks at Miraflores was in place on April 27, the total amount on that date being 880,696 cubic yards, bucket measurement out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 22	2,044	50.50	8	918	13.30	2	709	45.00	8	....	3,671
April 23	1,892	49.33	8	1,066	16.00	2	866	59.50	8	....	3,824
April 24	1,554	34.17	8	1,232	18.12	2	736	51.50	8	....	3,522
April 25	2,300	61.17	8	1,318	19.00	2	865	58.00	8	....	4,483
April 26	2,484	60.83	8	1,288	18.37	2	837	56.50	8	....	4,609
April 27	2,504	58.16	8	1,398	22.42	2	827	55.50	8	....	4,729
Total	12,778	314.16	8	7,220	107.21	2	4,840	326.00	8	....	24,838
Previously reported	....	....	......	....	....	......	....	....	......	3,693	855,858
Grand total	....	....	......	....	....	......	....	....	......	3,693	880,696

CANAL MEDAL BAR LIST.

(Continued)

The attached list contains the names of employes and ex-employes of the Isthmian Canal Commission, who at some time during the past year completed their fourth year of continuous service on the Isthmus and are now entitled to their first service bar. The date shown opposite each name is that on which the bar service was completed. This completes the list of those entitled to the first bar. The list of those entitled to a second bar and the P. R. R. medal and bar lists will be published in a future issue.

All changes or corrections should be reported to the Office of the Chairman, at Culebra, at an early date.

As soon as the list is revised, numbers will be assigned by lot, on both medal and bar lists and the lists will be forwarded to the Washington Office where final arrangements will be made for the proper engraving. Distribution will be made about September 1 of the present year.

Name.	*Bar due.*
1911.	
Marek, Joseph J	June 29
Needham, Lawrence K.	June 29
Parkis, Sydney W	June 29
Ruch, Omar J	June 29
Simmons, James A	June 29
Tuttle, Gene M	June 29
Hepler, James M	June 30
Robertson, Robert R	June 30
Clements, Walter T	July 1
Girdner, Edgar R	July 1
Sneed, C. Dud	July 1
Goeman, Charles I	July 3
Barker, Mary C	July 5
Cook, James R	July 5
Copeland, William P	July 5
Davis, Edward	July 5
Gibbs, Blanche	July 5
Grobe, William J	July 5
Madden, James T	July 5
Williams, Clarence H	July 5
Zimmerman, Benjamin F	July 5
Eden, Herbert L	July 8
Norman, Frank L	July 8
Benedict, William J	July 9
Chambers, John L	July 9
Cutler, Ralph	July 9
Eidnier, Benjamin F	July 9
Fisher, George W	July 9
Fitzpatrick, Charles C.	July 9
Gustavson, Gustave E.	July 9
Haldeman, Ezra P	July 9
Helmer, Joseph H	July 9
Hoffman, Carl P	July 9
Minor, Ernest B	July 9
Newbold, George W. K.	July 9
Sorrell, Quinton	July 9
Stevens, William H	July 9
Stewart, Wooster B	July 9
Stone, Arthur C	July 9
Short, J. H	July 13
Underwood, Joseph W	July 13
Williner, Michael	July 13
Colegrove, Albert M	July 16
Doyle, James	July 16
Earle, Julius C	July 16
Fleming, Harry V	July 16
Fullman, William	July 16
Hicks, John	July 16
Hinman, Herbert D	July 16
Jenkins, George L	July 16
Junger, Theodore R	July 16
McKeever, Daniel J	July 16
Ohlson, Elmer F	July 16
Quinn, Ed	July 16
Stevenson, William A	July 16
Wilson, John A	July 16
Jadwin, Edgar	July 18
Perrott, David G	July 18
Browning, Kent	July 21
Jones, Sam	July 22
Olson, Birger F	July 22
Birnie, Joseph	July 23
James, Alfred R	July 23
May, William H	July 23
Noble, Robert E	July 23
Stroup, Alex R	July 23
Brennan, Thomas H	July 24
Gaskill, Burt E	July 24
Holt, Xenophon D	July 24
Long, Thomas H	July 24
McAleer, Emmett	July 24
Muenchow, Charles W	July 24
Rebbeke, Ernest A	July 24
Ballew, Thomas	July 26
Duffy, Albert H	July 26
McNeill, James M	July 26
Young, James R	July 26
Herman, Thomas	July 27
Bayne, Clarence W	July 29
Humphreys, Benjamin L	July 29
Long, William H	July 29
Meister, Frederick	July 29
Pronger, Norman W	July 29
Tebbs, Paul M	July 29
Bethea, James K	July 30
Hall, Robert	July 31
Brett, Homer	Aug. 1
Foster, John	Aug. 1
Namur, Brun	Aug. 1
Alexander, Albert E	Aug. 2
Anderson, Andrew	Aug. 2
Booz, Thomas S	Aug. 2
Gamble, Robert M	Aug. 2
Ganser, John C	Aug. 2
Hallen, Ernest	Aug. 2
Harding, Chester	Aug. 2
Helliksen, Ludwig A	Aug. 2
Kelly, James A	Aug. 2
Lang, Edward	Aug. 2
Graham, Frank	Aug. 3
Smith, Alfred E	Aug. 5
Bishop, Joseph Bucklin	Aug. 7
Brown, George A	Aug. 7
Cate, Charles I	Aug. 7
Donahue, John Vincent	Aug. 7
Forbes, Sherman G	Aug. 7
Laird, Clarence H	Aug. 7
Mason, Aaron O	Aug. 7
Morgan, David M	Aug. 7
Nilsen, Nils	Aug. 7
Shepard, Frederick K	Aug. 7
Sill, Frederick DeV	Aug. 7
Stumph, Ayers W	Aug. 7
Burrer, Charles B	Aug. 8
Hyer, Leonard L	Aug. 8
Swain, Joe M	Aug. 8
Tew, Lewis H	Aug. 9
Doyle, Frank A	Aug. 12
Duncan, Charles C	Aug. 13
Dyer, Ephraim J	Aug. 14
Flynn, Francis D	Aug. 14
Gilkey, Arthur P	Aug. 14
Hill, Donald E	Aug. 14
Cheeks, William H	Aug. 16
MaGuire, William	Aug. 16
Fessler, Frank G	Aug. 18
Siler, John E	Aug. 18
White, Roy M	Aug. 18
McFarlane, Thomas W.	Aug. 19
Leonard, Verna	Aug. 21
Wempe, Henry J	Aug. 23
James, Richard E	Aug. 24
Barber, John G	Aug. 25
Bartley, John J	Aug. 25
Cash, John H	Aug. 25
Downes, John R	Aug. 25
Nye, Ralph F	Aug. 25
Pratt, Joseph	Aug. 25
Rogers, William D	Aug. 26
Strong, Harry F	Aug. 26
Horn, William S	Aug. 27
Baldwin, Richard G	Aug. 28
Fortney, Camden P	Aug. 28
Graham, Robert	Aug. 28
Greene, William L	Aug. 28
Grundy, Charles P	Aug. 28
Hennigh, Belva	Aug. 28
Langley, Clarence E	Aug. 28
Reeves, Joseph H	Aug. 28
Saville, Caleb M	Aug. 28
Bonalli, Peter	Aug. 30
Bennyhoff, William F	Sept. 2
Boyland, Harry H	Sept. 2
Reisinger, Franklin C	Sept. 2
Schildnauer, Edward	Sept. 2
Fahrback, Fred	Sept. 3
Grant, William H	Sept. 3
Clark, Frank T	Sept. 4
Kencke, Arthur	Sept. 4
Lucas, George C	Sept. 4
Williams, Charles R	Sept. 4
Harding, John L	Sept. 5
Edwards, David T., Jr.	Sept. 7
Kent, Thomas L	Sept. 7
Nixon, Frederick M	Sept. 7
Pougher, George W	Sept. 7
Vanderslice, George J	Sept. 7
Kelley, Charley	Sept. 9
Murray, James H	Sept. 9
Alper, Judah	Sept. 11
Buckius, Walter H	Sept. 13
Chapman, Arthur J	Sept. 13
Conner, Lee J	Sept. 13
Davenport, Robert H	Sept. 13
Erwin, William G	Sept. 13
Fink, Charles W	Sept. 13
Freeman, Floyd C	Sept. 13
Hall, David E	Sept. 13
Hamilton, Alanson	Sept. 13
Holland, Willis D	Sept. 13
Shay, Frank J	Sept. 13
Wichman, Frank S	Sept. 13
Hackett, Burton J	Sept. 17
Kieswetter, Robert C	Sept. 17
Lamastus, R. L	Sept. 17
Rowley, Agnes I	Sept. 17
Parker, William E	Sept. 18
Benson, Aaron	Sept. 19
Kratli, John O	Sept. 19
Cahill, John	Sept. 20
Beach, Frank A	Sept. 20
Graham, William H	Sept. 20
Helm, Peter	Sept. 20
Hile, George H	Sept. 20
Hopkins, Reed E	Sept. 20
Lewis, Frederick E	Sept. 20
Nuckols, Horace	Sept. 20
Ruben, O. N	Sept. 20
Sullivan, Edward G	Sept. 20
Vreeland, Eugene H	Sept. 20
Mitchiell, Charles D	Sept. 21
Patterson, Louis A	Sept. 21
Plante, Ida	Sept. 22
Thayer, Alimee A	Sept. 23
Williams, Jake B	Sept. 23
Evans, Leroy P	Sept. 24
Littlefield, Wesley T	Sept. 24
Ross, John W., Jr	Sept. 24
Collier, George W., Jr.	Sept. 26
Griesinger, Charles	Sept. 26
Jarrell, Charles D	Sept. 27
Anderson, Frank H	Sept. 30
Bohnhorst, Wilhelm H.	Sept. 30
Calkins, Charles E	Sept. 30
Curtis, Abner S	Sept. 30
Farlee, William A	Sept. 30
Gates, Ira N	Sept. 30
Hanff, William B	Sept. 30
Kelsey, John B	Sept. 30
Lipsey, Thomas E. L	Sept. 30
McInerney, Michael	Sept. 30
Morgali, Ralph	Sept. 30
Norton, Frederick D	Sept. 30
Norton, Rolland A	Sept. 30
Parker, Edwin F	Sept. 30
Stanton, Fred C	Sept. 30
White, Alna	Sept. 30
Wiggins, Ralph R	Sept. 30
Cuff, William J	Oct. 1
Manion, James	Oct. 1
Derrenbacher, William	Oct. 2
Mollenhauer, Arnold	Oct. 2
Brown, John J	Oct. 4
Gilmartin, Charles A	Oct. 6
Anderson, Charles J	Oct. 7
Conell, Thomas	Oct. 7
Casner, Edward	Oct. 8
Pittman, Katherine	Oct. 8
Stokes, George T	Oct. 8
Aubrey, John F	Oct. 10
Bloemer, Henry P	Oct. 10
Chisholm, Charles R	Oct. 13
Fors, Daniel	Oct. 13
Frost, Odina J. L	Oct. 13
Kosier, Robert S	Oct. 13
Payne, Edward W	Oct. 13
Seeley, Morris M	Oct. 13
Tribolet, Charles T	Oct. 13
Barrat, Joseph G	Oct. 14
Byrne, Michael J	Oct. 14
Crooks, George C	Oct. 14
Eagan, John F	Oct. 14
Greene, Jacob W	Oct. 14
Mason, Chauncey J	Oct. 14
Miller, Harry E	Oct. 14
Schwartz, Albert F	Oct. 14
Beattie, J. Maclslin	Oct. 15
Clarke, Elmer E	Oct. 16
Morrell, George W	Oct. 16
Peterson, C. F	Oct. 16
Danielsen, Julius A	Oct. 18
Gribbon, Henry C	Oct. 18
Schroeder, Henry	Oct. 18
Bishop, William J	Oct. 20
Letts, Charles G	Oct. 20
Haggerty, John	Oct. 21
Clarke, John A.	Oct. 22
Hess, Clyde R	Oct. 23
O'Connor, William F	Oct. 23
Tedford, Wallace A	Oct. 24
Wood, Joseph E	Oct. 24
Archer, Clifford F	Oct. 25
Jernegan, Warren G	Oct. 25
Lowe, Grover C	Oct. 25
McNiel, Jacob R	Oct. 25
Massen, Henry	Oct. 25
Perry, Charles S	Oct. 25
Bryon, Charles R	Oct. 26
Blenkinsop, Layton	Oct. 27
Boone, William O	Oct. 27
Brady, Edward	Oct. 27
Carr, Merle H	Oct. 27
Donnelly, Daniel R	Oct. 27
Eggleston, Orlando W	Oct. 27
Hughes, John H	Oct. 27
Lampson, Orson W	Oct. 27
McKay, John	Oct. 27
Payne, William H	Oct. 27
Pehler, Ida R	Oct. 27
Rattiner, William H	Oct. 27
Rosselot, William J	Oct. 27
Siegfried, Alvin	Oct. 27
Wilkins, John M., Jr	Oct. 27
Deems, Ernest A	Oct. 30
Fenstermacher, Edward	Oct. 30
McCormack, Angus	Oct. 31
Benninger, Marshall P.	Nov. 1
Bielep, Carl	Nov. 1
Coonly, John V	Nov. 1
Craddock, John C	Nov. 1
Falkner, John R	Nov. 1
Herrick, Albert	Nov. 1
Packard, Clement R	Nov. 1
Spriegel, Fred W	Nov. 1
Ericson, John A	Nov. 2
Newman, Clarence D	Nov. 3
Mayhew, Henry L	Nov. 7
Thomson, Walter S	Nov. 7
Williams, Harry O	Nov. 7
Higgins, Joseph H	Nov. 8
Reber, Ray	Nov. 8
Shuck, Frank E	Nov. 9
Whiting, Thomas J	Nov. 10
Clarke, John E	Nov. 11
Evans, Lawrence C	Nov. 12
Rogers, Walter H	Nov. 12
Wallace, Alexander	Nov. 12
Shaffer, George	Nov. 13
Cooper, William L	Nov. 14
Rose, Paul C	Nov. 14
Whaler, Frederick G	Nov. 14
Abston, Jack M	Nov. 15
Austin, Edward M	Nov. 15
Cheney, John W	Nov. 15
Blackburn, Samuel E	Nov. 17
Burns, Rollin P	Nov. 17
Carlson, Robert S	Nov. 17
Dempster, Thomas C	Nov. 17
Lanning, Harry T	Nov. 17
Meacham, Jerome	Nov. 17
Smith, Harry G	Nov. 17
Jackson, Henry	Nov. 18
Urwiler, Charles J	Nov. 20
Clarke, Charles E	Nov. 21
Allen, William J	Nov. 22
Dibrell, Jeptha W	Nov. 22
Granger, Rene	Nov. 22
Hill, Frank M	Nov. 22
Lester, Steve H	Nov. 22
Snapp, Bert M	Nov. 22
Kimball, Oliver	Nov. 24
Mitchell, Merle	Nov. 24
Naecker, Henry R	Nov. 24
Rosenquist, Fred H	Nov. 24
Showers, Ira M	Nov. 24
Smith, Walter B	Nov. 24
Stevens, Henry F	Nov. 24
Werner, George	Nov. 24
Bartlett, Emir C	Nov. 26
Jordan, Thomas M	Nov. 26
Drennan, Jeremy A	Nov. 29
Hunter, Hugh S	Nov. 29
Isgrig, Beverly T	Nov. 29
Oberle, Jack	Nov. 29
Sehr Mikel P	Nov. 29
Bryan, Samuel H	Dec. 2
Hagan, J. M	Dec. 2
Lingo, Charles R	Dec. 2
Clark, Lorin A	Dec. 3
Genac, Daniel J	Dec. 3
Keene, Charles B	Dec. 3
Maloney, Patrick H	Dec. 3
Stone, Hugh J	Dec. 4
Barlow, Herbert	Dec. 5
Knight, Evarts L	Dec. 5
Proctor, Clyde L	Dec. 5
Steele, William S	Dec. 5
Doyle, John B	Dec. 7
Grier, Charles T	Dec. 7
Cummings, Michael J	Dec. 8
Fluharty, Edward E	Dec. 9
Hedrick, William M	Dec. 9
Lee, Ernest E	Dec. 9

Name. **1911.**	*Bar due.*	*Name.*	*Bar due.*	*Namd.*	*Bar due.*	*Name.*	*Bar due.*	*Name.*	*Bar due.*
King, George L	Dec. 10	Bucklin, E. W	Dec. 15	Dunning, Lon B	Dec. 16	Grimison, Thomas I	Dec. 19	Shaw, George F	Dec. 23
Hoffman, Charles H	Dec. 11	Clark, John A	Dec. 15	Hooker, George H	Dec. 16	Johnson, Ben	Dec. 19	Thomas, Earl B	Dec. 24
Jansen, Cornelius J	Dec. 12	James, Charles H	Dec. 15	Loughery, George J	Dec. 16	Harrold, John J	Dec. 20	Williams, John H	Dec. 24
Berg, William H	Dec. 13	Lawrence, Joseph	Dec. 15	Whitney, Frank H	Dec. 17	Shoesmith, George W	Dec. 20	Matter, Edward P	Dec. 30
McCourt, John S	Dec. 13	McCally, Homer W	Dec. 15	Donnelly, Eugene A	Dec. 18	Davis, James W	Dec. 21	Cassidy, James O'C	Dec. 31
Timpany, John H	Dec. 13	Schofield, Ralph A	Dec. 15	Platow, William	Dec. 18	Fink, Joseph	Dec. 23	Cole, Simon C	Dec. 31

SOCIAL LIFE OF THE ZONE

Women's Clubs.

There will be a meeting of the executive board of the Canal Zone Federation of Women's Clubs at Cristobal on Saturday, May 18. Presidents of the federated clubs are requested to advise with members concerning questions that will come up. All questions relating to the library, traveling art gallery, and the work of special committees will be reported upon at this meeting. If any president cannot attend, she may send a representative, provided the name of such representative be forwarded to the Recording Secretary, Mrs. C. H. Elliott, Cristobal, not later than May 11. Federation officers may not send representatives. This meeting is the last that will be held until October and it is necessary that all business be settled at this time.

Owing to the illness of the president, the annual meeting of the Cristobal Woman's Club which should have been held on April 24, has been deferred until May 1. The business meeting will be preceded by a meeting of the executive board of the club.

The benefit dance given by the Gatun Woman's Club on April 13 netted over $50, which will go to the Federation fund. The club will probably give a similar entertainment on May 11.

The day of meeting for the Ancon Study club has been changed from Thursday to Friday. The meetings will be held at the homes of members, unless otherwise arranged. On May 3, the meeting will be at the home of Mrs. Mason, House 36, and the subject, "The Greek Renaissance."

Church Work.

The Rev. H. Page Dyer, of the Church of the Ascension, Philadelphia, will arrive on the Isthmus on Friday, May 3, for the purpose of holding a month's mission in the Episcopal churches and missions in the Canal Zone. The mission will begin with a conference of the clergy and lay workers at Christ Church on Saturday, May 4, and throughout the week following, special preaching services will be held daily. Every evening there will be a service at 7.30 preceded by a short service of song. From May 12 to May 19, Father Dyer will hold a mission at St. Paul's Church, Panama; from May 19 to May 26, the mission will be at St. Mark's, Culebra; from May 26 to June 2, at St. James', Empire.

The Rev. Henry A. Brown, chaplain at Ancon Hospital, will leave for the States on his annual vacation on May 3. During his absence the services at St. Luke's Hospital Chapel will be maintained as usual. On Sunday, May 5, the Rev. Edward J. Cooper will take the ten o'clock service, and on May 19, the Rev. Father Dyer. The pulpit will be occupied on the following Sundays according to arrangements to be made later.

On Sunday, April 28, the new mortuary chapel at Colon Hospital was blessed, the service being held in the afternoon at 4 o'clock. The hospital chaplains, the Rev. Father Cooper and the Rev. Father Volk, officiated. The service was attended by the doctors and nurses of the hospital staff.

The next meeting of the Woman's Altar Guild of St. Luke's Hospital Chapel, Ancon, will be held at Ancon Hall on Tuesday morning, May 7. For its Easter offering the Guild presented $50 to the general missionary fund for church extension work in the Canal Zone.

The Ladies' Auxiliary of the Gatun Christian League has inaugurated a course of missionary study under the direction of Mrs. Stephen Witt. Meetings of the auxiliary are held in the Commission chapel on the first and third Thursdays in each month. Mrs. Hanna is the president, and Mrs. Windes is secretary-treasurer.

The corner stone of the new church building erected by the United Methodist Church, West Indian, at Guachapali, Panama, will laid on Sunday afternoon, May 19. Delegations of fraternal orders, and representatives of the Salvation Army will be present.

The Southern Baptist Convention, represented on the Isthmus by the Rev. Stephen Witt, is erecting a church building for its services in New Gatun. The expenses of this building will be borne by the local members, assisted by the Missions board.

Odd Fellows' Anniversary.

On Friday, April 26, the different lodges of the Independent Order of Odd Fellows in the Canal Zone celebrated the 93rd anniversary of the founding of the Order. The first Zone lodge was organized on November 10, 1906, and was granted a charter the following year. This was at Gorgona; the second lodge was formed at Cristobal in May, 1908, the third at Ancon in 1910, and the fourth at Gatun in 1911. The auxiliary Order of the Daughters of Rebekah was organized in 1908.

Lawn Tennis Tournaments.

The singles and doubles tennis tournaments scheduled to be played on May 30 for the championship of the Isthmus for the year 1912 have been changed as follows:

May 5, singles preliminaries, Tivoli and Ancon Club courts; May 12, singles finals, Tivoli and Ancon Club courts; May 30, doubles preliminaries, courts to be announced later; June 2, doubles finals, courts to be announced later.

These tournaments are open to all comers upon the payment of one dollar entrance fee, the same to accompany the name of person desiring to enter, to B. C. Poole, Secretary and Treasurer, Isthmian Tennis Association, Ancon.

Booklet on First Aid to the Injured.

Concise directions for rendering first aid to the injured are given in a pocket pamphlet, three by five inches in size and containing 14 pages, which the Department of Sanitation has published and is distributing to employes through the heads of departments. Outlines are given of orderly movements in assisting victims of cuts, scalds and burns, drowning, and electric shock, and six diagrams, adapted from the "First Aid" of Maj. Charles Lynch, U. S. A., show the use of tourniquets and bandages and the points at which to apply pressure to stop bleeding in various parts of the body.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on May 8. All applicants for license as chauffeur must secure from the Department of Civil Administration, Executive office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8.00 a. m. on May 8, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their capacity properly to operate an automobile, and must have the automobile with them.

Postal Business and Canal Zone Revenues.

The total value of money orders issued in the Canal Zone during the month of March was $375,605.68, of which $311,604.49 was issued payable in the United States, which includes European orders, $63,173.94 in the Canal Zone, $568.25 in Martinique and $259.00 in Cost Rica. The number of orders issued was 18,447, the average value being, therefore, about $20 each. Money order fees amounted to $1,790.31. The postage sales amounted to $5,157.60, and newspaper postage to $16.38.

Revenue collections during the month of March were as follows:

Bicycle and chauffeur licenses	61.00
Insurance collections	143.10
Motor vehicle licenses	70.00
Steamboat inspection	657.50
Taxes and licenses	13,747.62
Total	$14,679.22

Postal Savings Bank.

A statement of Postal Savings Bank transactions at Canal Zone post offices for the period of March 3 to March 31. follows:

Name of Office.	Postal Savings Certificates Issued	Postal Savings Certificates Paid.
Ancon	$5,242.00	$1,426.00
Balboa	7,796.00	3,149.00
Bas Obispo	345.00	20.00
Corozal	10,037.00	2,705.00
Cristobal	5,755.00	990.00
Culebra	7,232.00	2,768.00
Empire	4,161.00	2,121.00
Gatun	9,680.00	2,357.00
Gorgona	22,143.00	4,661.00
Las Cascadas	11,545.00	2,672.00
Matachin	924.00	30.00
Miraflores	3,054.00	871.00
Paraiso	4,191.00	1,183.00
Pedro Miguel	15,703.00	4,110.00
Cristobal Station "A"	920.00	190.00
Cristobal Station "B"	645.00	365.00
Total	$109,373.00	$29,618.00

Married.

BAYNE-ELDREDGE—At Cristobal on April 11, Evelyn Clara Eldredge of Manchester, Mass., to Clarence W. Bayne of Silver City, N. M. Canal Zone residence, Empire.

JACKSON-NORRIS—On April 25, Miss Grace Isabelle Norris of Oakwood, Okla., to John James Jackson of Boston, Mass., at the Union Church, Cristobal, the Rev. Carl H. Elliott officiating. Canal Zone residence, Cristobal.

LOCK-BUILDING EQUIPMENT.

Forms for Concrete, and Porto Bello Crusher Plant Machinery for Sale.

Concrete work at Gatun Locks is so near completion that the steel back, side and culvert forms, which have been used in the construction of the walls of the locks proper, have been offered for sale; and the rock-crushing plant at Porto Bello, which has supplied the broken stone for the concrete, was closed down on April 30 and the equipment is offered for sale. The heavy masonry for the walls of the chambers has been completed, and the remaining concrete, 7 per cent of the total amount required for the locks, will be laid in finishing the chamber walls and in the construction of the approach and wing walls at each end of the locks. At the upper end the wing walls have been completed, except for smoothing the surfaces and grouting in equipment requisite for handling vessels in the forebays; and 12,000 of the 35,000 cubic yards of concrete in the cellular portion of the approach wall are yet to be placed. The solid part of this wall is practically completed. The greater portion of the remaining concrete construction work is to be done at the lower end of the locks, where none of the 130,000 cubic yards for the approach and wing walls has been laid. The sites of these walls are now under water and excavation for the foundations is being made by pipeline suction dredge.

The steel forms, bids for the purchase of which are to be opened in the Washington office of the Isthmian Canal Conmissiom on May 8, have been in use since the first concrete was laid at Gatun, on August 24, 1909, for the upper lock. A description of them and of the mode of erecting and aligning them was published in THE CANAL RECORD of September 1, 1909. They consist of 72 center-wall side forms, which are girders, 6 feet wide by 36 feet long and 6 inches deep, 3 center-wall back forms, 13 vertical section back forms, 13 center wall horizontal section back forms, 79 center-wall back-form angles, 205 side-wall side forms, 6 side-wall back forms, 17 side-wall vertical section back forms, 69 side-wall back-form angles, 40 collapsible culvert forms, 8 feet in horizontal diameter and 6 feet 6 inches in vertical diameter, and 23 collapsible tunnel culvert forms, 18 feet in diameter.

Throughout the erection of the three twin locks these forms have been used in the construction of the center and side walls; of the culverts extending through the length of the walls, with the exception of the portions at the dips between lock levels, for which wooden curved forms were constructed. Their use has been satisfactory.

For instance, in the construction of a wall, the steel face plates, or forms for a section of wall 36 feet long and 78 feet high could be moved on the towers designed to support them and be aligned for the placing of the concrete, to the full height of the wall, within a working day. And since there was no necessity, as in the use of forms made of portable wooden sections, for waiting until the concrete placed within the forms hardened before erecting those for the next section of wall above, the concrete could be placed within the complete steel forms as fast as it could be supplied by the mixing and handling plants. In practice, a 36-foot length of center wall was ordinarily built in 8 days, rising at the rate of about 10 feet a day.

The tower used to support the forms consists of a steel framework with a vertical side upon which the flat metal plates were aligned to form a continous face to the height required, and a system of struts in the rear, reinforcing the front part and providing against the lateral stress set up by the pressure of the concrete. A cross-section of a tower is a right triangle, with the right angle at the base of the wall for which the forms were placed. Moving the tower to successive locations was done by means of railway trucks at its base. Tracks were laid along the lock floor as required: and when it was desired to transfer a tower from one lock level to another trestles inclined on a grade of 10 per cent were used. Each of the trestles was about 290 feet long and built in sections 72 feet in length. After its first erection a trestle was preserved and if required at another place it was moved in sections by means of the cableways above the locks. The twelve towers are not offered for sale, but three have been dismantled and all of them will be put in storage at Mount Hope.

PORTO BELLO PLANT.

The cessation of rock-crushing at Porto Bello is due to the fact that there is now in the storage piles at the permanent and spillway mixing plants at Gatun sufficient rock for the concrete required for the completion of the work at the Atlantic end of Gatun Lake. The locks will require about 143,000 cubic yards more and the spillway about 28,000, or a total of about 171,000 cubic yards. Approximately eighty per cent of the remaining concrete is to be made with 24 cubic feet of rock in each cubic yard of concrete, which has been the standard proportion for heavy masonry at Gatun; and the other 20 per cent, which is to be reinforced concrete, will be mixed with cement, sand and rock in the proportion of 1:2:4. In the first case rock forms eight-ninths of the concrete; in the reinforced concrete it is four-sevenths of the whole. The total amount of rock in storage at Gatun is now about 170,000 cubic yards, enough to supply the estimated requirements and leave several thousands yards for contigencies.

In round numbers, 2,000,000 cubic yards of rock have been crushed by the plant at Porto Bello since it began operations in the latter part of 1907. It has supplied rock for use, in addition to its principal consumption at Gatun, in the concrete construction for the filtration plant at Agua Clara reservoir, for the sewers, gutters and curbs in Colon, for macadam roads, including the highway from Gatun to Colon, and for general use in the work of the Atlantic Division. The first load of stone from it was unloaded at Gatun in May, 1909.

The closing of the crushing plant will not be followed by the discontinuance of work in the quarries from which it was supplied. Operations in them will continue, with a slight reduction of force, in order to furnish large rocks for the fill at the Toro Point breakwater. It is calculated to haul a maxium of four 400-cubic yard barges of heavy rock to the breakwater each day. Nine or ten barges will be used in this service, and another will be used for hauling coal to Porto Bello from Cristobal. At the beginning of 1912 the Atlantic Division had 18 barges in service; three of them are being towed around South America, for use in the Pacific entrance, and two have been transferred to the Division of Fortifications. The two or three of the remainder, which will not be in use in connection with the Porto Bello operations, will be used in varied service. The present railway equipment in the quarries, built on a 42-inch gage, is to be supplanted by 5-foot, or Isthmian standard, gage equipment in order better to handle the heavy rocks. The new rolling stock will consist of 32 Lidgerwood cars, released by the Central Division, seven 400-class Rogers locomotives, and a dump car for general utility. As a result of this change the 42-inch gage rolling stock, including ten 40-ton Porter locomotives, has been reported available for sale.

The rolling stock is not to be sold, however, in connection with the crusher plant. Bids on the latter were to have been opened at the Washington office of the Commission on May 21, but as the original advertisement did not include the spare parts a supplementary circular is being prepared and new bids will be invited. The principal parts of the equipment for the plant, a description of which was published in THE CANAL RECORD of September 2, 1908, are two No. 9 and six No. 6 McCully rock crushers, and one No. 21 Gates crusher; one rock-conveying system, complete, with sprockets, gearing, T-rails, framing and so forth, for a pivotal conveyor of total length of approximately 394 lineal feet, with pivotal buckets of ¼-inch steel plates, 36 inches wide, 21 inches long and 11 inches deep, inside dimensions, carried by chain bars on 6-inch rollers set 24 inches from center to center; also, two cross conveyors, with approximately 122 feet between centers of end sprockets, with corresponding buckets, chain bars and rollers; two Sterling water-tube boilers of 185 horsepower; one Worthington surface condenser, with 2,255 square feet of tube surface, and air and circulating pumps; one Hamilton-Corliss cross-compound condensing engine, with indicated horsepower of 350 at ½ cut-off, 420 at ⅓ cut-off; one tandem compound Ball engine, of 250 indicated horsepower at normal speed of 160 to 170 revolutions per minute; and one tandem compound Ball engine of 400 indicated horsepower at 150 revolutions per minute.

Extension of Steamship Service to Colombia.

Commencing April 24, and until further notice, the steamships *Santa Marta*, *Metapan*, *Almirante* and *Zacapa*, in the United Fruit Company's New York–Jamaica–Panama–Colombia Service, will make Cartagena and Puerto Colombia ports of call. Vessels sail from Colon on Thursday at 8 p. m.; arrive at Cartagena on Saturday at 6 a. m. and leave at 5 p. m.; arrive at Puerto Colombia on Sunday at 6 a. m. and leave at 5 p. m.: arrive at Santa Marta at 6 a. m., Monday, and leave at 6 p. m., Tuesday; call at Cartgena in the forenoon of Wednesday; arrive at Colon on Thursday at 9 a. m. and leave at 11 a. m. for New York, by way of Kingston.

Public Health Lectures.

On Thursday evening, April 25, a lecture on the fly as a carrier of disease was given in the conversorium, Colon, the second in the series of free health lectures for the people. There was an attendance of about 200, this being one of the largest audiences that has attended any of the lectures. New slides were exhibited and the feature part of the program was an informal talk on Guatemala, illustrated with lantern slides.

The next lecture will be on oral hygiene on Thursday evening, May 23. The lecture will be in English.

DYNAMITE.

Explosive and Blasting Materials Required for the Coming Year.

It is estimated that only 3,986,500 pounds of dynamite will be required for the Canal work during the year beginning July 1, 1912, and the request for bids to be opened in Washington this week is based upon this amount, with the privilege of increasing or decreasing it by 20 per cent or less. The bidder must also state prices if awarded the whole amount specified, or 75, 50, or 25 per cent of it. Saltpeter dynamite is specified, but bids will be received on Trojan or similar dynamite that can meet the requirements of the work. The comparatively small amount of dynamite estimated for the forthcoming year is due to the approaching completion of the excavation work, and every precaution is being taken to avoid an overstock. The amounts purchased in past years, the amount delivered this year and to be delivered before July 1, as compared with the estimate for the forthcoming year, are as follows:

Year.	*Pounds.*	*Year.*	*Pounds.*
1904*........	500,000	1910.........	10,403,800
1906.........	1,400,000	1911.........	9,501,850
1907.........	5,087,000	1912.........	8,533,000
1908.........	6,822,000	1913†........	3,986,500
1909.........	8,270,000		

*Amount purchased for 1904 lasted during 1905.
†Estimate.

Of the dynamite estimated for the coming year, 2,680,000 pounds are 45 per cent in cartridges 1¼ by 8 inches, 1,072,000 pounds 60 per cent in cartridges 1¼ by 8 inches, and 234,500 pounds 60 per cent in cartridges 2 by 8 inches. The estimate for the various divisions shows that about 70 per cent of the total is for use in Culebra Cut, ten per cent each in the Atlantic and Pacific Divisions, and the balance for the Panama railroad, fortifications, and Balboa docks.

The estimate for blasting materials follows:

Blasting caps, number..................	328,000
Tape fuse, feet	877,000
Insulating tape, rolls, ½-pound..........	3,680
Connecting wire, feet..................	10,000
Lead wire, feet........................	555,300
Electric fuses, feet....................	627,100
Triple tape fuse, feet..................	36,000
Blasting powder, pounds..............	20,000
Leadwire, feet.........................	25,000

Concrete Work at Pedro Miguel Lock.

The heavy masonry for Pedro Miguel Lock proper is practically completed, with the exception of 2,840 cubic yards in the west side wall, immediately below the intake for the culvert. The greater portion of the wall at this point was built up by means of portable mixers but since it was brought almost to the level of the adjacent backfill concrete has been supplied by Decauville cars running over a trestle from a stiff-legged derrick mounted on the completed wall on a line with the site of the emergency dam. The derrick lifts 2-cubic yard buckets from narrow-gage trains at the bottom of the west approach chamber, supplied by the nearby permanent mixing plant, and dumps them into a hopper from which the Decauville cars are supplied.

The remainder of the heavy work will be on the approach and wing walls at both ends of the lock. At the upper end, 937 cubic yards have been laid in the west wing wall, raising it to an elevation of about 25 feet for a distance of 30 feet from its juncture with the buttress at the intake culvert. For the opposite wing wall a steamshovel has cut into the side of the hill to prepare a bedrock site, and the laying of concrete will begin shortly. The approach wall has been brought to a height of 30 feet, above the reach of the locomotive cranes which have been lifting buckets to the forms, and an additional elevator for Decauville cars, similar to the one at the upper end, described in THE CANAL RECORD of March 20, 1912, has been erected on the west side of the center of the wall to place concrete from the permanent mixing plant.

At the lower end of the lock, the east and west wing walls are 99 and 76 per cent completed, respectively. New forms have been erected for the west wall and concrete will be supplied from a portable mixer mounted on the lower end of the side wall proper. The lower approach will is to be extended 250 feet beyond its present length of 950 feet, requiring the placing of approximately 30,000 cubic yards of concrete.

March Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Average	Years of Record	Rai'y days 1912
Pacific Section						
Ancon........	1.83	.26	.01	.78	14	1
Balboa.......	2.16	.00	.00	.84	13	0
Miraflores....	2.49	.00	.00	.90	4	0
Pedro Miguel.	1.46	.03	.02	.44	5	1
Rio Grande...	1.69	.06	.03	.33	8	2
Central Section						
Culebra......	1.36	.06	.02	.68	22	1
Camacho.....	2.36	.13	.06	.58	6	2
Empire.......	1.60	.20	.01	.43	7	1
Gamboa......	3.12	.38	.10	.84	28	1
Juan Mina....	......	.22	.07	.14	2	2
Alhajuela.....	2.74	.01	.02	.66	13	1
E. Vigia......	2.95	.04	.08	.85	4	3
Gorgona......	2.98	.36	.02	.98	7	1
Frijoles......	......	......	.10	......	1	3
Trinidad.....	8.18	2.33	.28	3.17	5	6
Monte Lirio..	9.57	1.41	.24	3.76	5	11
Atlantic Sec.–						
Gatun........	9.08	1.80	.55	2.91	8	9
Brazos Brook.	9.71	1.30	.53	3.24	6	17
Colon........	5.46	1.41	.66	1.67	43	11
Porto Bello...	6.32	2.38	.60	2.76	5	18

Misdirected Letters.

ANCON, May 1, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Anderson, C. H. (2 class)
Anderson, Geo.
Bailey, Henry
Barnett, B.
Benny, Mrs. Nellie
Beverly, G. M.
Beyer, Walter
Bradley, Miss Blanche
Browning, Miss Corrine P
Bushe, Henry S.
Campere, Mrs. Pearl H.
Campbell, Jno.
Close, Joseph A. (2)
Cook, Otis P.
Cottey, S. F.
Cruse, Arden
Eudy, Arch
Fangney, Mike
Fay, Lawrence B.
Finch, E. V. L. (2 class)
Galvin, John
Galyean, Groner
Gebhart, Harry C.
Goldsmith, O.
Gordon, Mrs. Catherine
Greenwood, Miss Lova
Grisby, F. C.
Groff, Margaret M.
Groves, Louisa
Hackett, J. T.
Hall, W. H.
Heinrich, Mr. & Mrs. A.(2)
Higby, Mrs. F. W.
Holmberg, Harrey
Howell, Mrs. Sarah
Jay, William C.
Jenkins, Edward
Jennings, A. H.
Jones, Mrs. J. W.
Kett, Mrs. D.
Kimball, M. J.
King, Sam.
Lamont, Wilber S.
Leach, Miss Marion
Leverett, Hugh
Lunstrom, Mrs. Amanda
McGowan, James D.
MacNelley, Chas. J.
Mohr, Mrs. G. E.
Mooney, Gim
Morris, Miss Mabel M.
Neafsey, William (2)
Ortie, W. W.
Ortman, L. A. (pkg.)
Pierce, Mr. & Mrs. Harry
Reisinger, Carl A.
Saphro, Miss Esther
Simerus, Linsley
Smith, William
Stearns, Mr.
Thorington, William James
Welling, Albert
Westberg, Miss Dorothy
Westbrook, S. J.
Wiggins, Chas.
Wilkinson, W. W. (2)
Willson, Coronell
Willson, Mrs. Sarah
Wilman, Mrs. Arthur

FOUND—The person who left a camera in the Ancon baseball grounds may have same by proving property. S. C. Russell, Ancon Post Office.

OFFICIAL CIRCULARS.

Use of Water Restricted in Colon.

CULEBRA, C. Z., April 27, 1912.

CIRCULAR No. 365-D:

The utmost necessity exists for conserving the water supply from the Brazos Brook Reservoir, which has reached a low stage. The use of water should be restricted to actual necessities. All employes of the Isthmian Canal Commission and Panama Railroad Company residing in Cristobal and Colon are instructed to co-operate to this end. GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Overhauling of Rolling Equipment.

CULEBRA, C. Z., April 27, 1912.

CIRCULAR No. 323-B:

1. Before any piece of rolling equipment in use by any division or department is given a general overhauling or other repairs, it should be first ascertained whether economy would not result by substituting a surplus piece of equipment of similar class and capacity, and, if so, it is desired that this exchange be made by making the necessary transfers in the regular manner without plant charge.

2. In order to effect this in the simplest manner, the following general procedure is outlined: When any piece of rolling equipment (locomotive, car, locomotive crane, unloader, spreader, plow, track shifter or pile driver) becomes surplus and is turned over to the Quartermaster's Department as prescribed in Circular No. 323-Revised, the Quartermaster's Department will advise the Superintendent of the Mechanical Division accordingly, and the latter will make an approximate estimate of the cost of repairs required to put it in a serviceable condition.

3. Before any piece of rolling equipment is given heavy repairs, the Superintendent of the Mechanical Division will ascertain and report to the head of the division or department concerned whether there is any surplus equipment of the same or similar class and capacity that can be made ready for use at less cost. Upon the receipt of this information the head of the division or department concerned will arrange the transfers to effect the necessary substitution, which transfers will be without plant charge, and will issue the necessary orders for the repairs to the substituted equipment.

4. The foregoing provisions will also apply to steamshovels and rock drills, except that the Superintendent of Steamshovel Repairs will perform the duties in matters affecting this equipment prescribed hereinabove for the Superintendent of the Mechanical Division.

5. In order to effect the greatest economy and to obtain the greatest use for surplus equipment of the foregoing classes, the exchange of equipment of the same class, but of different capacities and costs, may be likewise made in accordance with the foregoing procedure, with the exception that in case of substitution of this kind the transfers will be made with a plant charge, which will be fixed by the Surveying Officer.

GEO. W. GOETHALS, *Chairman.*

Canal Zone Liquor Licenses.

ANCON, C. Z., April 29, 1912.

The Isthmian Canal Commission, at its meeting held at Culebra on April 26, has authorized the issuance of liquor licenses in the Canal Zone for the year commencing July 1, 1912, at Culebra, Empire, Matachin, Gorgona, and Gatun.

The areas within which saloons may be located are as follows:

Culebra—Lots 11 to 19, inclusive, block 1; lots 12 to 20, inclusive, block 2; lots 1 to 9, inclusive, block 4; lots 2 to 10, inclusive, block 5, West Culebra.

Empire—The area bounded by Second Avenue, Main Street, Seventh Avenue and Front Street, *Provided, however*, That no saloons in addition to the total number now being conducted on Front Street shall be licensed.

Matachin—On the main street of the town, on the north side of the Panama railroad, in line with the buildings in which saloons are now located.

Gorgona—Area bounded by Second Street, Avenue "E," Fifth Street and Central Avenue (or Avenue "A"); but no saloons will be permitted to face on Central Avenue.

Gatun—All of blocks 7 and 8; lots 1 to 5, inclusive, block 2; lots 1 to 5, inclusive, block 4; and lots 1 to 4, inclusive, block 6, of the new town laid out by the Panama Railroad Company.

All of the areas described are more particularly indicated on maps which may be seen in the office of the Collector of Revenues, Ancon, or in the offices of the Deputy Collectors of Revenues at Empire, Gorgona, and Cristobal.

The designation of the areas hereinbefore made, however, shall not be construed as prohibiting the renewal of the licenses of dealers now engaged in the retail sale of liquor, under proper license, in any of the towns mentioned, outside of the areas designated—the places of business of all such dealers outside of the areas described being shown on the maps hereinbefore referred to.

The number of saloons to be located in each town within the area designated shall not be restricted, except as indicated on Front Street, Empire, but each reliable and responsible applicant shall be granted a license for the sale of liquor within any such described area, in conformity with the Regulations, upon the payment of the necessary fee.

Applicants for licenses are invited to submit their applications prior to June 1, 1912, in conformity with the regulations adopted by the Isthmian Canal Commission, April 27, 1907, and amendments.

Tom M. Cooke, *Collector of Revenues.*

Acting General Foreman of Car Department.

Panama Railroad Company,
Office of General Superintendent.
Colon, R. P., April 26, 1912.

To all Concerned:

During the absence of Mr. J. Belt, General Foreman; Car Department, on 42 days' leave of absence effective May 3, 1912, Mr. C. O. Simonson is appointed Acting General Foreman of the Car Department.

J. A. Smith, *General Superintendent.*

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending April 27:

Trent, April 21, from New York, with 4 cases paper; for stock.

Nordpol, April 21, from Baltimore, with 2,032 bundles steel bars, 1,725 pieces steel angles, 10,000 bundles tie plates, 132 cases nuts, 184 drums gasoline, 5 pieces car wheels, for stock; 500 pieces car wheels, 30 bundles crane parts, 187 pieces oak lumber, for Mechanical Division; 1,600 bundles tie plates, 150 pieces structural steel, 13 bundles structural steel, 9 bundles car parts, for Panama Railroad Company; 32 cases valve machines, 177 cases valve parts, 16 crates valve parts, 43 bundles valve parts, 115 pieces valve parts, 8 barrels linseed oil, 1,070 pieces structural material, 392 bundles structural material, 120 cases structural material, 63 kegs bolts and nuts, 30 pieces machinery, for Superintendent of Erection; 8 bundles castings, for Atlantic Division; 1,720 bundles steel bars, 2,021 pieces steel bars, for Pacific Division; 150 bags creosoted pins, for stock.

Assyria, April 22, from Hamburg, with 6 cases thrust screws, for Superintendent of erection.

Aldershot, April 22, from Jacksonville, with 259 pieces creosoted piling, for Atlantic Division; 1,929 pieces lumber, for Mechanical Division; 461 pieces piling, 513 pieces lumber, for stock.

Pleiades, April 23, from San Francisco, with 1,074 bales hay, 750 cases dynamite, for stock.

Lord Downshire, April 23, from New York, with 135,903 bags cement, for Atlantic and Pacific Divisions.

Aztec, April 24, from San Francisco, with 47 coils manila rope, 4,994 pieces pine lumber, for stock.

Atenas, April 25, from New Orleans, with 1 motor fire engine, for Department of Civil Administration; 3,198 pieces lumber, for Mechanical Division; 2,431 pieces lumber, 30 pieces piling, 7 crates castings, 380 drums kerosene, 250 kegs white lead, 5 cases hardware, 135 barrels fire clay, for stock.

Santa Marta, April 25, from New York, with 158 bundles lumber, 60 pieces lumber, 5 cases chemicals, for Mechanical Division; 27 pieces steel ties, for Superintendent of Erection; 14,600 pieces hollow tile, 16 pieces steel ties, for Panama Railroad Company; 25 bales mops, 14 cases handles, for stock.

Thelma, April 25, from St. Mary's, Ga., with 1,656 pieces piling, for stock.

Panama, April 26, from New York, with 401 bundles steel bars, 8 cases electrical material, 84 crates brick, for Atlantic Division; 74 barrels sand, 22 cases brake shoes, 110 cases castings, 150 bundles car springs, for Mechanical Division; 30 cases cartridges, for Department of Civil Administration; 112 pieces signal material, 30 cases signal material, 22 pieces crane parts, for Panama Railroad Company; 1 launch, for Department of Civil Administration; 70 cases drugs and sundries, for Sanitary Department; 48 cases bolts, 4 cases electrical material, for Superintendent of Erection; 12 pieces wagon tongues, 10 pieces castings, 8 cases car seals, 25 barrels flour, 229 kegs bolts and rivets, 32 cases rubber hose, 50 cases candles, 32 cases air brake material, 10 cases leather belting, 10 cases cardboard, 167 bundles binder boards, 8 cases valves, 20 cases lubricating oil, 116 bundles steel bars, for stock; and a miscellaneous cargo, the whole consisting of 1,985 packages, weighing 275 tons.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for moving picture entertainments for the week May 6 to 11, is as follows: Monday, Cristobal; Tuesday, Gorgona; Wednesday, Gatun; Thursday, Empire; Friday, Corozal; Saturday, Culebra.

COROZAL.

Corozal defeated the Gatun indoor baseball team last Saturday night, 46 to 16. Gorgona is scheduled to play at Corozal on May 4.

The Culebra billiard team won four games from the Corozal team on Saturday night. Scores—Conlan of Culebra, 100,100; Thompson of Corozal, 90, 92; Tragsdorf of Culebra, 100, 100; Fulton, 41, 98.

CULEBRA.

Following are the bowling scores of Saturday evening, Gorgona and Culebra, at Culebra:

Culebra.				Gorgona.			
Hill	91	90	84	Davis	99	89	103
Corn'waite	85	98	91	Anderson	98	94	68
Bartlett	78	87	101	Deihl	78	85	98
Gier	93	76	110	Sims	82	82	89
Palmer	82	95	85	Haggerty	102	94	73
Total	429	446	471		439	421	429

A handball tournament will be started this week; all men interested in exercise of this kind may join.

Empire chess players played the Culebra men at Culebra on Wednesday evening.

The Cristobal duckpin bowling team will bowl against Culebra at Culebra on Saturday evening.

The Culebra Glee Club is planning a concert for the last week of May.

EMPIRE.

The following high scores were bowled in duckpins during the past week—Rodeighiro 105; Grund, 114; Gustaveson, 117, 118; Goolsby, 106; Barnes, 105; Pinney, 111,111; N. Giavolli, 105.

Empire won two of three games from Gatun on Saturday, April 27; the scores:

Empire.				Gatun.			
Goolsby	75	75		Mohen	84	87	82
Dainel'on	90	85	100	Vier	88	102	90
L. Giavolli	98	87	90	Smith	77	89	98
N. Giavolli	82	78	80	Swallow	95	90	99
Rodeighiro	96	90	103	Barte	70	82	85
Dakin			84				
Total	440	415	457		414	450	454

The Spanish classes meet on Tuesday and Thursday evenings.

GORGONA.

The following games of duckpins were rolled at Gorgona on Saturday night, April 27, between Gorgona and Culebra:

Culebra.				Gorgona.			
Sterns	81	83	84	Morrison	89	91	80
Baumer	84	90	75	Dunlop	109	90	92
Crain	90	81	95	Robertson	82	85	92
Mengel	83	101	78	Miner	87	78	70
Silver	71	83	88	Otis	82	88	83
Total	409	438	420		449	432	417

Empire forfeited the game of indoor baseball to Gorgona on Saturday night, April 27. Gorgona has won eight games and leads the league with 100 per cent. The next game is with Corozal at Corozal on Saturday night, May 4. The team defeated the Company A team from Camp Elliott on Thursday night, April 25, at Gorgona, 33 to 12, and it plays at Camp Elliott on Tuesday, April 30.

At the next sunset song service on Sunday night, May 5, colored slides will be used with some of the songs.

There were 321 present at the moving picture show Wednesday, April 24 and 256 present at the entertainment given by the Hill Magical Company on Saturday, April 27.

The affirmative won the debate at the discussion club on Monday night, April 22, when Messrs. Swanson and Carruthers spoke in favor of a second nomination by the Republican party of Mr. Taft. Messrs. Morrison and Grossberg spoke on the negative.

GATUN.

Gatun broke even with Empire in the pool and billiard match played at Gatun on Saturday evening, April 27. 'DePoorter and Hughes, who did not play, will play two games at Empire on Saturday night, May 4. The results were: *Pool—Gatun*—Dalton, 100; Galloway, 59. *Empire*—McKeever, 78; Pearson, 100. *Billiards—Gatun*—Townsley, 100; Wurster, 57. *Empire*—Fullman, 57; Wood, 100.

The bowling results of Saturday night, April 27, at Gatun were:

Gatun...... 409 429 467 Empire.... 460 450 414

Captain Huttelmaier of Gatun made an average of 102 for his three games.

Although the local duckpin tournament is not quite finished, the Algonquins, Huttelmaier, captain, have enough games to their credit to make it impossible for them to lose first place. The other members of the team are Hughes, C. R., Jewell, Wilson, and Smith. Each will receive a gold medal. Several teams are trying for second place.

At the meeting of the Executive Council on Friday, April 26, W. C. Gayer was elected vice-chairman in the place of Dan St. Clair, resigned.

A pianola with 60 records has been placed in the lobby of the clubhouse.

Mrs. M. E. McLeod played two violin solos at the moving picture show on Friday night, April 26.

Two new Spanish classes are being organized this week, a beginners' class for men and a beginners' class for women. The former will meet at 9.30 Wednesdays and Fridays and the latter at 1.30 p. m., Tuesdays and Thursdays. There are now six classes studying Spanish with thirty-four students. The charge for a ten-lesson course is $2.50.

The Hill Magical Company will appear at the Gatun clubhouse on Friday, May 3.

On Saturday evening, May 4, Gatun plays baseball at Cristobal, bowls Gorgona at home and abroad, and plays pool and billiards with Empire.

The following additional newspapers have been ordered from the states: *Memphis Commercial Appeal*, *Chicago Record Herald*, *Houston Post*, and *Pittsburgh Dispatch*.

The Discussion Club met on Sunday evening, April 28. The subject was "Woman and the Ideal Home." The Secretary acted as leader.

CRISTOBAL.

An audience of 221 people witnessed the performance by the Hill Magical Company on Tuesday, April 21.

Two hundred and ninety-seven people attended the moving picture show on Saturday evening, April 27. The next in the series will be on Monday evening, May 5.

On Saturday evening, April 27, the Cristobal duckpin team won all three games over the Camp Elliott team on the local alleys.

On Saturday evening, May 4, the Culebra duckpin team will roll the Cristobal team on the local alleys.

The Gatun indoor baseball team will play the Cristobal team on the local floor on Saturday evening, May 4.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Pedro Miguel, C. Z., Sunday, May 5, 1912, at 4.30 p. m. The program follows:

1. March—*Under the Double Eagle*..........Wagner
2. Selection—*The Prince of Pilsen*...........Luders
3. —*Chicken Reel*...........................Daly
4. Overture—*William Tell*.................Rossini
5. Mazurka—*La Czarine*....................Ganne
6. Potpourri—*The Sunny South*..............Lampe
7. Descriptive—*The Racket at Gilligan's*....De Witt

   Synopsis—The guests gather at Gilligan's; after their arrival Gilligan sings a song, which is followed by a country dance; the star singer then renders a touching ballad, after which the bagpipes strike up. "Are ye's all ready?" shouts Gilligan. "Yis." "Then fire away." A regular "welt the floor" and "slip time" follows, a sand jig comes next, and the festivities close with all singing "Saint Patrick's Day in the Morning."

8. Medley Selection—*Popular Songs*...........Halle
9. March—*Everybody's Doing It Now*........Berlin

Charles E. Jennings, *Musical Director.*

The next concert will be given at the Hotel Tivoli, Ancon, May 12, at 8 p. m.

Rainfall from April 1 to 27, 1912, Inclusive.

Stations.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	1.85	23	2.67
Balboa	1.40	23	2.67
*Miraflores	1.64	22	3.45
Pedro Miguel	1.07	20	1.63
Rio Grande	1.05	20	1.72
Central Section—			
Culebra	1.20	20	1.92
*Camacho	1.65	20	2.26
Empire	2.06	20	2.39
Gamboa	.24	23	.77
*Juan Mina	.56	20	.86
*Gorgona	.20	13	.71
Frijoles	.44	23	1.19
*Monte Lirio	.58	23	1.24
Atlantic Section—			
Gatun	2.93	20	4.12
*Brazos Brook	.34	23	.77
Colon	.25	23	.75

*Standard rain gauge—readings at 5 p. m., daily. Automatic rain gauge at unstarred stations—values midnight to midnight.

COMMISSARY DEPARTMENT,

The Commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning May 1, 1912.

FRESH MEATS.	Price.
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off, (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Plate, per lb.	9
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds), per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24
Venison (Imported), Stew, per pound	.12
Forequarter (not under 6½ pounds), per pound	.16
Rack (not under 5½ pounds), per pound	.27
Saddle (not under 7½ lbs.), per pound	.27
Leg (not under 9 pounds), per pound	.27
Chops, per pound	.28
Cutlets	.28
MISCELLANEOUS.	
Caviar, Russian in ½-lb. jars	89
Livers—Beef, per pound	†8½
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	†19
Sweetbread—Beef, per pound	25
Eggs, fresh, dozen	26
one-half dozen only	14
Bluefish, per lb.	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	14
Fluke, fresh, per pound	10
Oysters, 1 quart, per box	40
Shads, fresh, each	90
POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 5½ pounds, each	1.10
Fancy roasting, corn fed, about 4½ pounds, each	.90
Fowls, each ††60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.25
Hens, milk fed, for roasting, about 3 pounds, each	50
Broilers, milk fed, each	70
corn fed, each	60
Turkeys, per pound	23
Squabs, each	35
Capons, each	2.10
Ducks, teal, per pair	50
Ducks, Blackhead, pair	60
Partridges	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30
CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Ham—Sugar cured, Half, for boiling, per pound.	21
Boiled, per pound	28
Hocks, per pound	‡8
Bacon—Breakfast, whole piece, per pound	23
Breakfast, sliced, per pound	24
Pork, salt family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18
DAIRY PRODUCTS.	
Butter—Creamery special, per pound	†38
Sheffield Farms, extra fancy, per lb.	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	25
Swiss, per pound	28
Edam, each	1.00
Edam in tins, per tin	26
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**20
Fer-mil-lac, bottle	**20
Ice cream, quart	‡25
½-gallon	‡50
VEGETABLES AND FRUITS.	
Beets, per pound	3
Celery, per head	10
Cabbage, per pound	5
Cucumbers, per pound	20
Carrots, per pound	3
Cauliflower, per pound	8
Egg Plant, per pound	10
Lettuce, per pound	10
Onions, per pound	6½
Onions, green, per bunch	5
Potatoes, white, per pound	3
sweet, per pound	2
Parsnips, per pound	4
Squash	5
Spinach, per pound	*6
Turnips, per pound	3
Tomatoes, per pound	10
Yams, per pound	3
Apples, per pound	6
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, per dozen	12

*Indicates reduction from last list.
**Indicates 5 cents allowed for return of bottle.
†Indicates advance on last list.
††Fowls weigh each about as follows: 3, 3½, 4, 4½ and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight, is supplied and refund note sent for difference.
‡Sold only from commissaries; no orders taken for delivery.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, April 27, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia	Alhajuela	Gamboa	Bohio.	Gatun Lake
Sun., April 21	124.7	91.2	43.8	16.7	16.7
Mon., April 22	124.8	91.2	43.9	16.6	16.6
Tues., April 23	125.8	92.4	43.8	16.6	16.5
Wed., April 24	127.1	93.5	45.6	16.6	16.5
Thurs., April 25	126.5	93.4	45.6	16.7	16.6
Fri., April 26	125.1	91.6	44.3	16.7	16.6
Sat., April 27	125.0	91.5	44.0	16.7	16.6
Height of low water to the nearest foot	125.0	91.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending May 8, 1912. (75th meridian time):

Date.	Low.	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
May 2	......	4.17	10.23	4.27	10.45
May 3	......	4.55	11.05	5.05	11.25
May 4	......	5.34	11.45	5.43	......
			P.M.		
May 5	12.06	6.12	12.25	6.21	......
May 6	12.46	6.51	1.06	7.00	......
May 7	1.28	7.33	1.52	7.41	......
May 8	2.13	8.20	2.42	8.30	......

The following ships arrived at or departed from the port of Balboa during the week ending April 27:

Arrivals—April 21, *Ecuador*, from Guayaquil; April 22, *Pachitea*, from Callao; April 23, *Pleiades*, from San Francisco; April 24, *Aztec*, from San Francisco; April 24, *Limori*, from Valparaiso; April 27, *Peru* (P. S. N.), from Guayaquil.

Departures—April 22, *San Jose*, to San Francisco; April 22, *Tricolor*, to South; April 22, *Chile*, to Guayaquil; April 22, *Quilpue*, to Valparaiso; April 23, *Rupanco*, to Buenaventura; April 25, *Ecuador*, to Guayaquil; April 26, *Pennsylvania*, to San Francisco.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.				
Allianca	P. R. R.	Friday	April	26
Colon	P. R. R.	Thursday	May	2
Advance	P. R. R.	Thursday	May	9
Panama	P. R. R.	Wednesday	May	15
Allianca	P. R. R.	Tuesday	May	21
Colon	P. R. R.	Monday	May	27
Advance	P. R. R.	Monday	June	3
Panama	P. R. R.	Saturday	June	8
Allianca	P. R. R.	Friday	June	14
Colon	P. R. R.	Friday	June	21
Advance	P. R. R.	Thursday	June	27
Panama	P. R. R.	Wednesday	July	3
Allianca	P. R. R.	Tuesday	July	9
Colon	P. R. R.	Monday	July	15
CRISTOBAL TO NEW YORK.				
Panama	P. R. R.	Friday	May	3
Allianca	P. R. R.	Thursday	May	9
Colon	P. R. R.	Wednesday	May	15
Advance	P. R. R.	Tuesday	May	21
Panama	P. R. R.	Monday	May	27
Allianca	P. R. R.	Sunday	June	2
Colon	P. R. R.	Sunday	June	9
Advance	P. R. R.	Saturday	June	15
Panama	P. R. R.	Friday	June	21
Allianca	P. R. R.	Thursday	June	27
Colon	P. R. R.	Wednesday	July	3
Advance	P. R. R.	Tuesday	July	9
Panama	P. R. R.	Monday	July	15
NEW YORK TO COLON.				
Metapan	U. F. C.	Wednesday	April	24
Arcadian	R. M.	Saturday	April	27
Prinz Sigismund	H.-A.	Saturday	April	27
Tivives	U. F. C.	Saturday	April	27
Zacapa	U. F. C.	Wednesday	May	1
Sixaola	U. F. C.	Saturday	May	4
Prinz Joachim	H.-A.	Saturday	May	4
Almirante	U. F. C.	Wednesday	May	8
Tagus	R. M.	Saturday	May	11
Prinz Eitel Friedrich	H.-A.	Saturday	May	11
Carillo	U. F. C.	Saturday	May	11
Santa Marta	U. F. C.	Wednesday	May	15
Prinz August Wilhelm	H.-A.	Saturday	May	18
Turrialba	U. F. C.	Saturday	May	18
Metapan	U. F. C.	Wednesday	May	22
Oruba	R. M.	Saturday	May	25
Prinz Sigismund	H.-A.	Saturday	May	25
Tivives	U. F. C.	Saturday	May	25
Zacapa	U. F. C.	Wednesday	May	29
Sixaolo	U. F. C.	Saturday	June	1
Prinz Joachim	H.-A.	Saturday	June	1
Almirante	U. F. C.	Wednesday	June	5
Thames	R. M.	Saturday	June	8
Carrillo	U. F. C.	Saturday	June	8
Prinz Eitel Friedrich	H.-A.	Saturday	June	8
COLON TO NEW YORK.				
Santa Marta	U. F. C.	Thursday	May	2
Turrialba	U. F. C.	Tuesday	May	7
Prinz August Wilhelm	H.-A.	Tuesday	May	7
Metapan	U. F. C.	Thursday	May	9
Prinz Sigismund	H.-A.	Monday	May	13
Orotava	R. M.	Tuesday	May	14
Tivives	U. F. C.	Tuesday	May	14
Zacapa	U. F. C.	Thursday	May	16
Prinz Joachim	H.-A.	Tuesday	May	21
Sixaolo	U. F. C.	Tuesday	May	21
Almirante	U. F. C.	Thursday	May	23
Prinz Eitel Friedrich	H.-A.	Monday	May	27
Thames	R. M.	Tuesday	May	28
Santa Marta	U. F. C.	Thursday	May	30
Turrialba	U. F. C.	Tuesday	June	4
Prinz August Wilhelm	H.-A.	Tuesday	June	4
Metapan	U. F. C.	Thursday	June	6
Prinz Sigismund	H.-A.	Monday	June	10
Trent	R. M.	Thuesday	June	11
NEW ORLEANS TO COLON.				
Parismina	U. F. C.	Saturday	April	27
Cartago	U. F. C.	Wednesday	May	1
Abangarez	U. F. C.	Saturday	May	4
Heredia	U. F. C.	Wednesday	May	8
Atenas	U. F. C.	Saturday	May	11
Orleanian	U. F. C.	Wednesday	May	15
Parismina	U. F. C.	Saturday	May	18
COLON TO NEW ORLEANS.				
Atenas	U. F. C.	Thursday	May	2
Orleanian	U. F. C.	Thursday	May	2
Parismina	U. F. C.	Thursday	May	9
Cartago	U. F. C.	Thursday	May	9
Abangarez	U. F. C.	Thursday	May	16
Heredia	U. F. C.	Thursday	May	16

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, MAY 8, 1912. No. 37.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

High Record for Concrete Placement in Locks.

During the month of April 107,211 cubic yards of concrete were placed in the Pacific locks, of which 97,751 cubic yards were placed at Miraflores, and 9,460 cubic yards at Pedro Miguel. This surpasses the previous highest monthly record of concrete placed in the locks, during March, 1912, which amounted to 93,037 cubic yards, of which 83,706 cubic yards were placed at Miraflores, and 9,331 cubic yards at Pedro Miguel. The highest lock record prior to that of March was 89,401 cubic yards, laid at Gatun Locks in the month of June, 1910.

Canal Work in April.

The grand total of Canal excavation to May 1 was 168,486,884 cubic yards, leaving to be excavated 26,836,495 cubic yards, or less than one-sixth of the entire amount for the completed Canal.

The total for April was 2,754,383 cubic yards, as compared with 2,691,753 cubic yards, in April, 1911.

The dry excavation amounted to 1,849,592 cubic yards, and was principally by steamshovels. The dredges removed 787,611 cubic yards, and 117,180 yards were sluiced at Miraflores Locks, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on the locks at Gatun, Pedro Miguel and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 403,616 cubic yards. There was no dry excavation in this division during the month.

The total excavation in the Central Division was 1,654,475 cubic yards, 1,620,555 cubic yards from the prism, and 33,920 cubic yards from the Obispo Diversion.

In the Pacific Division, the total excavation was 696,292 cubic yards, 383,995 cubic yards of which was taken out by dredging at the Pacific entrance and 117,180 by sluicing.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Locks, Dam and Spillway			
Mindi			
Total			
Wet excavation—			
Atlantic entrance	134,261		134,261
Locks, Dam and Spillway	269,355		269,355
East Diversion			
Total	403,616		403,616
Total wet and dry excavation	403,616		403,616

CENTRAL DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Culebra Cut	1,429,048		1,429,048
Chagres section	171,731	19,776	191,507
Obispo Diversion	26,168	7,752	33,920
Total	1,626,947	27,528	1,654,475

PACIFIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Locks, Dams and Spillways	42,363		42,363
Diversions			
Prism, south of Pedro Miguel Locks	152,754		152,754
Total	195,117		195,117
Wet excavation—			
Pacific entrance	383,995	117,180	501,175
Miraflores Locks			
Diversions			
Total	383,995	117,180	501,175
Total wet and dry excavation	579,112	117,180	696,292

TOTAL CANAL EXCAVATION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation	1,822,064	27,528	1,849,592
Wet excavation	787,611	117,180	904,791
Total	2,609,675	144,708	2,754,383

Mean rainfall along Canal (ten stations), 2.35 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as prism, diversions, or locks, etc.; that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc. It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL	Atlantic.	Pacific.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks	11,600	107,195	118,795
Concrete laid in dams and spillways	3,392		3,392
Fill placed in dams	491,145	93,677	584,822

First Lock Gate Operating Machinery Complete.

The miter gate moving machinery for the west leaf of the upper guard gate in the east chamber of Gatun Locks has been installed complete and will be tried as soon as the rivets still required in the sheathing of the gate have been driven. The operation of the machine proper, without strut connection with the leaf, has been tested satisfactorily and on May 2 it was ready for use. Electricity for the driving motors is supplied from a bank of transformers with temporary leads, put in for tests. The miter gate moving machinery is the third of the lock operating devices to be completed.

Highest Steamshovel Records.

Steamshovel No. 257 (Samuel T. Lyons, engineer and Edw. E. Austin, craneman), working in the west borrow pit, Gatun Dam, excavated:

DATE.	Large Oliver Cars.	Car Measurement.
April 30	254	4,318
May 1	264	4,488
May 2	308	5,236

The place measurement exceeded the car measurement on May 2 by 318 cubic yards, making 5,554 cubic yards for the working day of eight hours. This is the highest daily record for a shovel of any class since the beginning of operations by the Commission.

Steamshovel No. 120 (T. P. Kelleher, engineer, and L. P. Bonnell, craneman), working in the west borrow pit, Gatun Dam, excavated a total of 64,978 cubic yards in the month of April (25 working days).

This is the highest monthly record for a 70-ton steamshovel since the beginning of operations by the Commission.

Rise of Gatun Lake.

The steel sluice gates controlling the flow of water through the Spillway Dam at Gatun, which are now embodied in the ogee, were closed on April 30 and it is purposed to keep them closed, unless excessive floods require them to be opened, so that the water will back up until it begins to flow over the crest of the ogee, which is 50 feet above sea-level. When the sluice gates were closed Gatun Lake was at elevation + 16.6 feet. From calculations made from the data of rainy season flow into the Gatun Lake watershed it is estimated that the surface of the lake will rise approximately thirty-three feet by the early part of August, 1912.

With the completion of steamshovel work at San Pablo and of contractor's task work at Bohio, dry excavation in the Canal channel through the proposed lake is finished, except for a small piece, let by contract, near Juan Grande. The two pipe line suction dredges at work on the lake side of Gatun Dam will be moved, after the water is beyond their depth at the dam, to portions of the channel between Gorgona and Gamboa to do finishing work in the removal of deposits of gravel left by floods and of other irregularities in the bottom. The dike across the channel at Gamboa to prevent the flooding

NOTES OF PROGRESS.

(*Continued.*)

of Culebra Cut marks the southern end of the lake channel.

The anticipated rise of the lake required that the south approach wall under construction at Gatun Locks be brought to an elevation of at least 61 feet above sealevel. Concrete placed on May 4 brought the last section of the wall to the required height. The wall will be pushed to its final elevation of 99 feet above sealevel, or 14 feet above the final normal level of the lake.

To prevent flooding the chambers of the locks the upper guard gates are to be completed and closed. Both leaves in the east chamber have been hung, and, upon the completion of riveting of plates and adjustment of the struts from the miter gate moving machinery, which is installed, they will be ready for use. In the west chamber a considerable amount of riveting remains to be done, for which increased equipment and forces will be concentrated on the two leaves. The tops of the sills for the upper guard gates are at elevation 37 feet 4 inches above sealevel.

The culverts in center and side walls, through which the water from the lake is to be passed in the operation of the locks, are being closed at the upper ends with steel bulkheads. In the operation of the locks the intakes will be controlled by Stoney gate valves but, as it is not desirable to use them for estoppel through the long period until the Canal is ready for use, the bulkheads will afford protection from flooding. Each bulkhead consists of a series of 10-inch, 30-pound "I" beams, 14 feet long, laid flat, transversely across the culvert. The bottoms of the culverts for the side walls, at the intakes, are at elevation 24.2 feet above sealevel.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 87 per cent completed, 197,343 cubic yards, out of a total of 225,000, having been placed at the close of work on May 4. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
April 29	132	6.30	1
April 30	28	1.15	1
May 1	112	6.00	1
May 2	48	3.00	1
May 3	48	3.00	1
May 4	38	1.45	1
Total	406	21.30	1
Previously reported	196,937		
Grand total	197,343		

Concrete Work at Miraflores.

The east side wall for the lower lock at Miraflores is from thirty to sixty feet high for its entire length of 1,000 feet, and the foundation for the wing wall flaring from the lower end has been laid over a distance of about a hundred feet. Concrete has been placed by two berm cranes, supplying since February a daily average of over 600 cubic yards. The west side and center walls have been extended about 500 feet from the juncture with the upper lock and are from twenty to forty feet in height. The center wall is being built by three chamber cranes which place concrete brought to the site in 2-cubic yard buckets by narrow gage trains from the auxiliary mixing plant in the east side wall of the upper lock. One berm crane and four ½-yard portable mixers are supplying concrete for the west side wall. Slides in the embankment adjacent to the site of the wall have made it necessary to erect the wall to a height of about twenty feet with portable mixers, and dump backfill of rock and earth against it, to afford safe foundation for the cranes. The other berm crane on the west side is placing concrete in the lower end of the upper lock. Over 91 per cent of the concrete for the upper lock proper is in place

CONCRETE WORK IN THE LOCKS.

About 84 per cent of the concrete for the locks is in place, the amount at the close of work on May 4 being 3,612,306½ cubic yards, out of a total of approximately 4,303,486. A total of 29,539 cubic yards of concrete was laid in the locks during the week ending May 4.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on May 4 being 1,868,100½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending May 4, and of the total follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 29	708	13.50	5					737
April 30	416	13.56	4					492
May 1	458	6.24	4					469½
May 2	228	3.49	2					241½
May 3	458	8.04	4					470
May 4	292	4.50	4					308
*Portable mixer				158				
Total	2,560	50.53	3.8	158				2,718
Previously reported								1,865,382½
Grand total								1,868,100½

The 158 yards shown for the portable mixer are reinforced concrete, and were placed on the following days: April 29th, 29; April 30th, 76; May 1st, 11.5; May 2nd, 13.5; May 3rd, 12; May 4th, 16.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 93 per cent completed, 838,974 cubic yards, out of a total of 890,750, bucket measurement, having been placed at the close of work on May 4. The record for each of the six working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 29	168	4.25	1	273	26.50	5		441
April 30	141	4.00	1	283	23.00	4		424
May 1	66	1.75	1	176	17.50	5		242
May 2	182	4.50	1	256	24.50	5		438
May 3	122	6.00	1	281	21.50	5		403
May 4	42	1.00	1	295	26.00	5		337
Totals	721	21.50	1	1,564	139.00	4.83		2,285
Previously reported							4,423	836,689
Grand totals							4,423	838,974

MIRAFLORES LOCKS.

Over 64 per cent of the concrete for the system of two twin locks at Miraflores was in place on May 4, the total amount on that date being 905,232 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
April 29	2,382	60.33	8	1,190	17.33	2	847	59.50	8		4,419
April 30	2,278	59.83	8	1,656	20.13	2	907	56.50	8		4,841
May 1	1,904	55.50	8	1,278	18.00	2	941	60.50	8		4,123
May 2	1,116	39.67	7	1,134	16.33	2	919	59.50	8		3,169
May 3	1,488	42.50	8	1,362	19.33	2	821	55.00	8		3,671
May 4	2,282	64.33	8	1,378	17.75	2	653	49.00	7		4,313
Total	11,450	322.16	7.83	7,998	108.87	2	5,088	340.00	7.83		24,536
Previously reported										3,693	880,696
Grand total										3,693	905,232

STEAMSHOVEL RECORDS.

Work of Central Division Shovels in April.

During the month of April the total amount of material excavated in the Central Division was 1,654,475 cubic yards, of which 362,615 cubic yards were classified as earth, and 1,291,860 cubic yards as rock.

Of this quantity 1,624,947 cubic yards were removed by steamshovels, and 19,776 cubic yards by cranes. Contractors removed 6,496 cubic yards by hand and 3,256 cubic yards by steamshovel.

The high record for the month was made by steamshovel No. 227, working 25 days in the Culebra District, which excavated 62,453 cubic yards of rock.

The second best record for the month was made by steamshovel No. 230, working 25 days in the Culebra District, which excavated 51,661 cubic yards of rock and earth.

The best record for a shovel of the seventy-ton class was made by shovel No. 121, working 12 days in the Chagres District, which excavated 26,568 cubic yards of earth.

Shovel No. 227, working in the Culebra District, made a high record for one day by excavating 3,401 cubic yards of rock on April 11.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best record for the month and for one day are shown in the following table:

BEST RECORDS FOR THE MONTH.

CULEBRA DISTRICT.

Shovel No.	Cubic Yards. Earth.	Rock.	Total.	No. of days at work.
227	....	62,453	62,453	25
230	30,897	20,764	51,661	25
203	....	47,745	47,745	25
EMPIRE DISTRICT.				
228	....	40,742	40,742	25
221	11,000	27,268	38,268	25
211	....	34,217	34,217	25
PEDRO MIGUEL.				
231	....	46,821	46,821	25
253	....	49,325	49,325	25
CHAGRES.				
121	36,568	....	36,568	12
265	9,104	21,000	30,104	16
108	22,928	7,000	29,928	25

BEST RECORDS FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
265	Chagres	April 2	Rock and Earth	2,380
256	Empire	April 9	Rock	2,508
228	Empire	April 25	Rock	2,577
211	Empire	April 24	Rock	2,586
227	Culebra	April 11	Rock and Earth	3,401
224	Culebra	April 2	Rock	3,040
204	Culebra	April 25	Rock and Earth	2,869
212	Culebra	April 25	Rock	2,712
231	Pedro Miguel	April 20	Rock	2,888

Steamshovel No. 225, Cristobal Terminal Docks.

The following statement shows the performance of Steamshovel No. 225, for the month of April, 1912. This steamshovel is working in the borrow pit at Folks River, excavating rock for filling the mole at the Cristobal Terminal Docks:

QUANTITIES OF EXCAVATION (64% ROCK, 36% EARTH.)

	Cubic Yards.
By car measurement	59,560
By cross section	53,050
By cross section, rock	33,520
By cross section, earth	19,530
Average per car	8.91

OPERATION REPORT.

Days worked	26
Hours under steam	200.00
Hours worked	138.00
Per cent of time under steam that shovel worked	69.0
Average daily output, cross section measurement	2,122

DELAYS.

Cause.	Hours and minutes.	P. C. of time under Steam
Mining	4.30	2.2
Cleaning track	2.30	1.3
Repairs	5.05	2.5
Waiting for cars	12.30	6.3
Switching	13.35	6.8
Derailments	1.30	0.7
Moving up shovel	18.55	9.5
Cutting out (once)	0.30	0.2
Waiting for steam	1.50	0.9
Cleaning slide from shovel	1.15	0.6
Total	62.00	31.0

Borrow Pit Excavation for Gatun Dam.

The six steamshovels (two 91-ton and four 70-ton), working in borrow pits for Gatun Dam, excavated a total of 341,994 cubic yards, place measurement, in 25 working days in April or an average of 2,280 cubic yards per shovel per day for the month.

The following table classifies the material excavated and indicates the yardage of each shovel by place measurement:

Steam Shovel	Cubic Yards. Earth	Rock	Total
Shovels No. 116 & 263	19,871	46,683	66,554
Shovels No. 117 & 116	35,222	12,128	47,350
Shovel No. 120	39,987	24,991	64,978
Shovel No. 132	49,202	2,590	51,792
Shovel No. 134	38,748	6,879	45,627
Shovel No. 257	25,636	40,057	65,693
Total	208,666	133,328	341,994

Central Division Unloaders for April.

The following statement shows the number of trains and lidgerwood cars unloaded by the Central Division during the month of April:

Location.	No. of unloaders.	No. of trains.	No. of cars.
Balboa	4	1,202	24,040
Miraflores	3	731	14,620
Gamboa	*4	1,100	23,088
Totals	*11	3,033	61,748

*One unloader worked but 14 days.

Ancon Crusher.

A statement of the rock crushed at Ancon quarry for the week ending May 4, follows:

Date.	Hours worked.	Cubic Yards.
April 29	11.05	4,736
April 30	13.40	4,761
May 1	11.55	5,386
May 2	12.30	4,793
May 3	12.40	4,772
May 4	12.00	4,901
Total	73.50	29,349

Porto Bello Crusher.

A statement of the work done at the Porto Bello quarry on April 29 and 30, the two last days of crusher operation, follows:

Date.	Hours worked.	Cubic Yards.
April 29	3.55	1,910
April 30	2.25	1,226
Total	6.20	3,166

Sailing of the Colon.

Owing to necessary repairs, the steamship *Colon* did not sail from New York until Saturday, May 4, instead of on May 2 as previously scheduled.

EXECUTIVE ORDER.

To Prevent Trespassing Upon Reservations.

By virtue of the authority vested in me, I hereby establish the following Order for the Canal Zone:

Section 1. Every person who shall go into or upon any reservation or other place belonging to or under the control of the United States of America, the Canal Zone Government, or the Panama Railroad Company, after such reservation or place has been posted as hereinafter prescribed in this Order, and without the permission of the person in charge of such reservation or place, shall be deemed guilty of trespassing; and upon conviction shall be punished by a fine not to exceed $25.00, or by imprisonment in jail not to exceed 30 days, or by both such fine and imprisonment in the discretion of the court.

Section 2. The posting required by this Order shall consist of printed or painted signs, conspicuously placed, by the authority of the Chairman of the Commission, at or near the reservation or place from which the public are to be excluded, and shall in plain and simple words warn all persons against trespassing upon the reservation or place.

Section 3. Every person who wilfully injures, destroys, or removes any sign placed or erected under the provisions of this Order shall be punished by a fine not to exceed $100.00, or by imprisonment in jail not to exceed 3 months, or by both such fine and imprisonment in the discretion of the court.

Section 4. This Order shall take effect 60 days from and after this date.

WM. H. TAFT.

THE WHITE HOUSE,
April 17, 1912.

Water Station at Frijoles.

The Panama railroad has installed a permanent water station at the new town of Frijoles on the relocated line. Water is pumped from the Frijolito River and stored in a reinforced concrete tank of 50,000 gallons capacity. The old Sheffield crane formerly at Matachin has been erected for supplying southbound trains and a new one is to be installed for the northbound trains.

Obituary.

John P. Golden, employed as a foreman at Ancon Quarry, was instantly killed on May 2 by a large stone, which fell through the roof of the quarry storehouse, striking him on the head. The stone was thrown from a blast of dynamite. Mr. Golden was twenty-four years old, born in Marion Center, Kansas, and had been on the Isthmus nearly four years. He was a widower, and is survived by his father, Deury Golden, living at Flora, Ill.

Public Health Lectures.

The Public Health Committee, which was recently organized in the Canal Zone, has, at the request of the central committee in connection with the American Medical Association, made arrangements for a series of free lectures to be given in the principal Canal Zone towns. The lectures will be on popular topics, illustrated with stereopticon views.

A party of tourists, numbering about 200, arrived at Balboa on Sunday, May 5, on the steamship *Sonoma* of the Spreckels Line, from San Francisco, San Diego, and other Pacific Coast cities. They spent Monday and Tuesday in sight-seeing along the Canal and left on their return trip on Wednesday.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M'THS.	CULEBRA SECTION.*								CHAGRES SECTION.**				
	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912
Jan.....	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	1,416,035	169,447	389,399	175,802	255,385	28,357
Feb	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	1,349,569	200,145	450,182	286,309	219,550	66,145
March .	132,840	239,178	815,270	1,290,885	1,434,597	1,509,728	1,728,748	1,539,618	324,233	619,491	484,846	297,339	172,607
April ..	126,749	213,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	329,483	510,020	428,777	102,103	171,731
May....	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	....	235,902	386,170	248,974	29,783	....
June ...	76,905	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	....	322,145	275,900	164,389	32,288	....
July ...	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	....	345,757	233,897	166,106	22,284	....
August	49,210	244,823	786,866	1,171,927	1,173,370	1,377,714	1,442,402	....	368,683	231,543	234,404	21,892	....
Sept ...	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	1,340,173	....	346,948	235,818	234,290	21,272	....
Oct	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	1,306,971	....	424,911	221,409	271,409	12,216	....
Nov....	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	....	336,390	93,619	260,882	12,248	....
Dec....	70,630	307,689	1,025,485	1,210,046	1,152,022	1,211,400	1,351,082	....	383,948	105,044	197,481	10,809	....
Totals..	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	16,596,891	5,760,438	3,787,992	3,752,492	3,153,669	1,037,169	438,840

MONTHS.	ATLANTIC DIVISION.†					PACIFIC DIVISION.¶									
	GATUN LOCKS, DAM AND SPILLWAY.††					PEDRO MIGUEL LOCKS.‡					MIRAFLORES LOCKS, DAMS AND SPILLWAY.‡‡				
	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911	1912.	1908.	1909.	1910.	1911.	1912.
January...	292,155	102,690	125,011	65,889	1,330	....	83,726	27,320	15,690	24,969	7,203	61,202	31,479	48,744	95,609
February.	282,797	95,031	123,738	50,511	1,228	....	58,242	9,486	6,809	18,480	39,046	53,689	15,300	12,936	47,426
March....	374,598	90,051	132,007	51,431	254	....	95,624	6,784	674	1,777	73,194	51,417	18,184	72,739	28,352
April.....	373,456	70,009	103,243	12,548	....	....	101,365	9,129	255	13,269	98,943	60,060	12,148	79,751	29,094
May......	266,747	52,786	82,958	17,677	....	....	57,523	10,405	5,905	....	73,023	47,588	20,250	57,975	....
June.....	244,951	36,556	88,088	4,840	....	13,228	70,971	8,420	7,454	....	68,691	55,653	21,994	38,023	....
July	213,359	39,058	95,503	6,897	....	22,648	77,503	4,410	6,273	....	104,369	50,999	11,990	97,884	....
August	188,262	40,346	99,737	22 558	....	22,217	58,025	12,789	220	....	94,248	35,446	17,548	102,249	....
Sept'mber	145,990	49,945	103,040	3,489	....	28,833	48,825	10,405	3,472	....	90,923	31,803	8,590	96,112	....
October...	154,064	57,321	118,327	112	....	48,875	39,002	7,433	5,365	....	74,700	25,349	9,850	107,790	....
November	118,278	63,452	94,552	....	....	55,401	20,207	10,636	12,962	....	52,930	18,644	9,400	84,894	....
December	119,904	96,590	72,030	....	....	65,578	28,342	11,195	17,320	....	69,650	20,083	17,906	79,480	....
Totals..	2,774,561	793,835	1,238,234	235,952	2,812	256,780	739,355	128,412	82,399	58,495	846,920	511,933	194,639	878,577	200,481

*Total to May 1, 1912. 79,263,262 cubic yards. Excavated in 1904, May to December 243,472 cubic yards.

**Total to May 1, 1912, 12,362,931 cu. yds., of which 192,769 cu. yds. were removed in 1907, 188,239 cu. yds. were removed by sluicing.

†Dry excavation at Mindi Hills began in July, 1907. There were excavated 172 851 cubic yards, 1907; 590,955 cubic yards 1908; 713,015 cubic yards, 1909; 662,995 cubic yards, 1911; 56, 382 cubic yards, 1912; total to May 1, 2,196 198 cubic yards.

¶There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 1,041,895 cubic yards at different points in prism to May 1, 1912. There were also 172 cubic yards removed by steamshovels outside of prism during October, 1908.

††Total to May 1, 1912, 6,412,201 cubic yards; in this total are included 26,628 cubic yards excavated October to December, 1906, and 1,340,179 cubic yards in 1907.

‡Total to May 1, 1912, 1,265,441 cubic yards. ‡‡Total to May 1, 1912, 2,632,550 cubic yards.

WET EXCAVATION.

MONTHS.	ATLANTIC DIVISION.†						PACIFIC DIVISION.††							
	ATLANTIC ENTRANCE.§						PACIFIC ENTRANCE.§§							
	1907.	1908.	1909.	1910.	1911.	1912.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
January...	111,100	490,701	521,050	510,055	520,181	520,228	....	95,940	94,710	460,250	469,529	518,936	379,810	412,118
February ..	110,002	427,722	444,910	493,448	455,318	581,399	....	95,940	93,480	663,519	671,477	285,791	386,866	432,796
March.....	84,145	546,886	461,208	412,325	391,736	103,373	....	116,820	92,319	783,281	865,696	462,588	639,761	404,939
April.......	69,889	496,366	470,635	190,574	492,579	134,261	....	110,700	104,855	676,539	731,767	534,322	439,622	383,995
May.......	133,847	564,386	315,370	447,578	514,178	....	......	112,340	122,157	530,466	720,753	484,509	548,047	....
June.......	124,118	572,749	182,575	458,021	452,098	....	50,676	62,697	133,575	656,621	844,685	475,486	576,100	....
July.......	109,922	625,497	348,451	423,092	425,195	....	41,533	98,400	108,338	696,170	733,181	515,782	520,692	....
Augus	194,297	638,217	422,846	508,829	367,456	....	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....
September	403,842	624,776	410,574	451,873	420,434	....	114,308	105,780	153,975	750,080	662,976	473,585	534,667	....
October....	415,120	505,260	314,778	549,788	470,400	....	81,836	97,170	357,122	762,276	720,920	467,873	339,815	....
November.	422,797	570,832	457,889	600,708	742,242	....	71,176	92,988	365,423	609,089	627,791	425,870	462,283	....
December.	442,835	679,604	489,121	482,370	533,409	....	71,094	90,528	349,551	729,960	727,460	387,034	278,960	....
Totals.....	2,621,914	6,742,996	4,839,407	5,528,661	5,785,226	1,339,261	485,153	1,191,233	2,143,789	8,056,025	8,399,498	5,538,745	5,736,864	1,633,848

†Dredges removed 38,425 cubic yards at Gatun Dam site in 1907, and 1,083,141 cubic yards at Gatun Locks in 1908 and 1909 and 1912 of which 269,355 was removed in April, 1912.

††Excavated at Miraflores Locks 309 647 cubic yards in 1909; 156,125 cubic yards in 1910; 176,578 cubic yards in 1911; total 642,350 cu. yds.

§Total to May 1, 1912, 28,284,930 cu yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906.

§§Total to May 1, 1912, 33,185,155 cubic yards. Of this amount, 932,707 yards were removed by monitors.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.†			PEDRO MIGUEL LOCKS.††			MIRAFLORES LOCKS.‡		
	1910.	1911.	1912.	1910.	1911.	1912.	1910.	1911.	1912.
Jan	54,136	72,919	34,983	16,273	38,513	15,077	....	24,018	48,416
Feb............	55,696	72,103	26,664	13,218	37,011	12,639	146	20,896	63,893
March	60,998	86,884	27,532	18,793	44,716	9,331	314	31,173	83,706
April...........	63,227	67,361	11,600	24,522	28,635	9,460	13	38,758	97,735
May............	74,273	67,844	....	29,576	19,135	....	27	36,154	....
June	89,401	55,305	....	30,631	18,243	....	1,603	26,536	....
July	84,001	71,046	....	41,464	19,906	....	3 672	32,840	....
Aug.............	85,686	66,928	....	51,264	20,736	....	6,030	57,003	....
Sept............	76,720	57,298	....	50,702	15,379	....	18,133	56,083	....
Oct.............	86,949	53,636	....	61,422	25,637	....	22,159	60,873	....
Nov.............	75,152	43,907	....	64,248	19,622	....	23,871	41,726	....
Dec.............	80,212	43,590	....	42,834	14,360	....	21,533	48,772	....
Total........	886,451	758,821	100,779	444,947	301,893	46,507	97,501	474,832	293,750

Spillway, Gatun Dam, March 17, 1909—May 1, 1912, 198,471 cu. yds.
Miraflores Dam, to May 1, 1912, 321 cubic yards.
†116,072 cu. yds in 1909. ††33,856 cu. yds in 1909 ‡102 cu. yds in 1909.

FILL PLACED IN DAMS.

M'THS.	GATUN.*				PEDRO MIGUEL.†		MIRAFLORES.‡			
	1911.		1912.		1911.	1912.	1911.		1912.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan...	211,992	218,690	173,900	239,266	......	38,044	89,243	24,685	....	24,920
Feb..	301,733	211,008	211,399	145,221	......	35,153	87,335	32,404	....	26,475
Mar..	342,800	255,047	242,874	229,059	.....	86,252	25,131	23,940	......	24,570
April	368,658	205,130	204,189	286,956	......	67,385	14,100	67,260	....	26,292
May..	419,348	207,751	....	....	......	......	18,353	30,032	....	....
June .	432,008	227,996	....	....	......	.....	53,858	28,315	....	....
July..	324,947	201,996	....	....	14,865	......	24,957	54,415	....	....
Aug..	259,389	232,426	....	....	24,812	......	25,000	72,203	....	....
Sept..	261,838	194,497	....	....	4,052	......	6,409	34,480	....	....
Oct...	214,320	218,305	....	....	3,400	......	7,130	37,250	....	....
Nov..	266,603	207,157	....	....	3,190	.....	14,370	31,800	....	....
Dec..	89,752	233,063	....	....	7,350	......	......	23,730	....	....
T'tal	3,493,388	2,613,066	832,362	900,502	57,669	226834	366,336	460,514	....	102,257

*Wet fill to Jan. 1, 1911, 5,833,076 c. y.; Dry fill to Jan. 1, 1911, 6,128,105 c. y.
†Dry fill to Jan. 1, 1911, 260,852 c. y.
‡Wet fill to Jan. 1, 1911, 294,712 c. y. Dry fill to Jan. 1, 1911, 609,863 c. y;

CANAL EXCAVATION TO DATE.

By French Companies................		78,146,960
French excavation useful to present Canal................		29,908,000
By Americans—		
Dry excavation................	105,064,644	
Dredges................	63,422,240	
Total................		168,486,884
May 4 to December 31, 1904................	243,472	
January 1 to December 31, 1905................	1,799,227	
January 1 to December 31, 1906................	4,948,497	
January 1 to December 31, 1907................	15,765,290	
January 1 to December 31, 1908................	37,116,735	
January 1 to December 31, 1909................	35,096,166	
January 1 to December 31, 1910................	31,437,677	
January 1 to December 31, 1911................	31,603 899	
January 1 to March 31, 1912................	10,475,921	

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation................	8,608,399	38,014,895	*108,252	9,212,927
Dredges................	29,406,496		9,321,179	
Central—				
Culebra Cut................	79,263,262	91,626,193	10,180,743	10,175,103
All other points................	12,362,931		*5,640	
Pacific—				
Dry excavation................	5,018,291	38,845,796	1,913,789	7,448,465
Dredges................	33,827,505		5,534,676	
Grand totals................		168,486,884		26,836,495

*Estimate exceeded by this amount.

EIGHT YEARS OF CANAL WORK.

Summary of Accomplishment during the Eighth Year of American Occupation.

The United States Government took charge of the Canal work on the Isthmus on May 4, 1904, eight years ago. The first three years of occupation were devoted largely to organizing a working force, providing a healthful living place for canal workers, developing plans for the excavation and construction, and assembling a plant. What was accomplished during the years of preparation is set forth in detail in a series of articles published in issues of The Canal Record of May and June, 1908. The work of each year since then has been related in The Canal Record at the close of that year.

The record of excavation accomplished, concrete placed, and dams constructed will be found in the table on the opposite page. The cost of construction in its various branches since the beginning up to the close of March will be found in the statement of construction expenditures, which forms a part of this issue of The Canal Record. The general decrease in unit costs as indicated therein is attributable to the constantly increasing efficiency of the whole force.

Such work as that of civil government, public health, housing and feeding the workers, contracting for and receiving supplies, and the conduct of the Panama railroad, was carried on during the past year according to the established routine, without changes of importance. In the Canal construction, work on the locks was greatly advanced, excavation was brought within 86 per cent of completion, plans for terminal facilities were decided upon and construction begun, the erection of fortifications at the Canal entrances was started, and a system of lighting for the Canal was decided upon and its institution begun.

LOCK BUILDING.

It will be seen from the statement of the amount of concrete placed in the locks that the concrete work at Gatun and Pedro Miguel Locks is almost completed, while that at Miraflores is about 65 per cent completed and is advancing at the rate of considerably over twenty thousand cubic yards a week. Further information about the work at Miraflores will be found also in this issue. Following closely upon the completion of the concrete work the task of erecting gates, building emergency dams, placing the valves that will control the flow of water, and installing the machinery required for operating the various parts, has been begun.

Gates—The manufacture of the gates was begun in October, 1910, and erection in June, 1911, when work on the upper guard gates at Gatun was started. In all the locks there are 46 of these gates, each composed of two leaves, and each leaf is a built-up structure, 7 feet thick, 65 feet long, and from 47 to 82 feet high. All the material comes knocked down from the contractor's plant in Pittsburgh, and must be put together in the locks. This part of the work entails the driving of about 6,000,000 rivets in the field. Of the total of 58,000 tons of steel for the gates about 25 per cent had been put in place though not all riveted on May 1, and about two-thirds of the total had been manufactured in the States. Gate erection is in progress at Gatun and Pedro Miguel, but it will not begin at Miraflores until it has been completed at Pedro Miguel.

The contract for the machinery that will open and close the gates was let in June, 1911, and the erection was begun at Gatun in January, 1912.

Water Control Valves—The contract for the rising stem valves that will control the flow of water into the lock chambers was let in September. Two of these valves had previously undergone tests, and the machine which operates them had also been tested. After undergoing further tests at the works of the maker, the first machines were brought to the Isthmus and the installation was begun in December, 1911. There are 134 valves of this type to be installed, a total of 1,876 tons of metal. One hundred and thirty-four of them are 10 feet 8 inches wide and 18 feet 10 inches high. Only two of these valves are in place; 43 of them have been shipped from the States, ready for erection. Contracts for the 120 cylindrical valves that will control the flow of water from the center culverts into the lock chambers were let previous to the year just closed, and the installation was completed, except of the few to be placed in the lower lock at Miraflores. Each of the rising stem gate valves and cylindrical valves is operated by a motor-driven machine built especially for the purpose. Contracts for the machines and the motors to drive them were made during the past year, and the machines were tested both in the States and at Gatun Locks.

Emergency Dams—The contract for the six emergency dams that will guard the upper levels of the locks, for use in case of accident to the gates, was let in May, 1911, and the erection of the first of the dams at Gatun has been begun. These dams are steel truss bridges of the cantilever type pivoted on the lock wall in such a way that they may be swung across the channel, and rested on the wall, parallel with the channel. From the bridges are suspended six steel girders which are raised when the bridge is not in use and lowered when it is desired to close the channel. Upon these girders are lowered panels of steel which make a complete closure of the channel. The total weight of the six bridges is 12,000 tons. They are 263 feet long, and of this length the arm which extends over the channel is 163 feet. They are 93 feet in width. The designing engineer of the dams, who has been inspecting the work in the contractor's shops, is now on the Isthmus and will supervise the erection.

Fender Chains, Approach Wall Fenders—The contract for fender chains and for the machines to raise and lower them was let during the year. These chains are to be stretched across the locks in front of certain gates to prevent ramming by ships that might become uncontrollable. The chains are to be manufactured at the Boston Navy Yard and one of them recently passed a successful test and is now on its way to the Isthmus. The fenders on the approach walls will be stringers of hardwood, bearing on helical springs. The contract for springs and bearing boxes was let during the past year. Contracts were also let for sump pumps to keep dry various sumps in gates, and in machinery pits.

Electrical Appliances—Practically all the lock machinery will be operated, directly or otherwise, by motors electrically driven. The only exceptions are the fender chains, which will be actuated by hydraulic power, but the pumps to supply water will be driven by electricity. During the year the plans for central control of all machines, except the emergency dams, were approved and the contract for the equipment has been let. Bids for equipment of 36 transformer rooms, three switchboards in control houses at each series of locks, and equipment for six cable rooms will be opened at Washington on May 22.

The contract for one trial locomotive, representative of forty towing locomotives, by means of which ships will be towed through the locks, was also let during the year, and it is in process of construction. In all there will be required a total of 944 motors to drive the operating machinery, all, of the 220-volt, 25-cycle, 3-phase, alternating current type. Contract has been entered into for 803 of these motors, leaving the contract of 135 miter gate and miter forcing machines still unawarded.

DAMS.

Gatun—The hydraulic fill of the east section of the Gatun Dam was completed during the year, and the work of placing dry fill to bring the dam to its final height, about 107 feet above sealevel, is now in progress, while the placing of rock along the south toe, against which the lake will wash, is also being carried on. Three suction dredges are working on the hydraulic fill of the west section of the dam and the dry fill is advancing, material being supplied from borrow pits.

Miraflores—The hydraulic fill of the west dam at Miraflores was completed during the year, and the dry fill is practically finished. The east dam is to be a concrete wing wall reaching from the locks to the hills, and work on this has not been begun.

Pedro Miguel—Work on the west dam at Pedro Miguel Locks has been resumed, and the dam has been raised almost to full height for the greater part of its length.

The statement on the opposite page gives the total amount of fill placed in the various dams.

GATUN SPILLWAY AND HYDRO-ELECTRIC PLANT.

The construction of the concrete portion of the dam across the Spillway at Gatun was carried on throughout the dry season, and has reached such a stage that it may be concluded during the approaching wet season.

The contract for the regulating gates in this and the spillway at Miraflores was let during the year, and work on the gates is advancing, although erection on the Isthmus has not begun.

The contract for the hydro-electric plant was made during the year and the manufacture is in progress. This includes: (1) Three water turbines of 2,250 k. w. capacity, with three governors, three headgates, three penstocks, and one lubricating system; (2) Three electric generators of 2,000 k. w. capacity, 3 exciters of 50 k. w. capacity, 2 motor-driven exciter sets of 100 k. w. capacity; and (3) one 20-ton, 3-motor, traveling crane. The building for the station will be erected by the Commission alongside the Spillway at Gatun. This plant will generate electricity for all of the operating machinery and lights on the Canal. Specifications are about to be sent to the States, covering the purchase of the additional equipment required for the hydro-electric station.

EXCAVATION.

During the year ending May 1 the excavation in the Lake region between Gatun and Gamboa was practically completed. There are about 150,000 cubic yards of silt, that has collected in the sections immediately north of Culebra Cut, because the Chagres River has been running through this part of the Canal. This silt will be removed later by dredges.

In the Atlantic and Pacific entrances the dredging work continued, and the excavation in those sections is respectively 70 and 80 per cent completed. The ladder dredge *Corozal* arrived at the Pacific entrance in March and is at work.

Excavation was begun in the section between Pedro Miguel and Miraflores Locks.

Excavation was completed at Gatun Locks, and Pedro Miguel Lock, and is nearing completion in Miraflores lock pit.

Culebra Cut—The excavation in Culebra Cut is 89 per cent completed. The record of the past year and the records of previous years are, as follows:

May 1 to May 1	Cubic Yards
1904–1905	648,911
1905–1906	1,250,570
1906–1907	4,861,895
1907–1908	11,285,217
1908–1909	13,955,753
1909–1910	14,886,427
1910–1911	15,925,976
1911–1912	16,448,513

Trouble with slides continued throughout the year. The plan of lessening the amount of material that will move into the Cut, by lightening the mass at the top, was continued and the unusually long dry season has been very favorable to this work.

The lowest steamshovel cut is now 17 feet above the bottom of the channel at Culebra, the summit of excavation. From this point it runs down to the final grade at both ends. At the north end the excavation is practically finished, from the Chagres River as far south as Las Cascadas; and at the south end the trench is nearly to grade for a mile or more. The greater part of what remains to be taken out lies between Empire and Gold Hill, a distance of about two miles.

TERMINAL FACILITIES.

Studies were completed during the year for the terminal docks at both entrances to the Canal, and work was begun. The reports giving details have been published in THE CANAL RECORD. It was decided that, until the need for mechanical handling of cargo at the terminal docks becomes more apparent than it is, no system of cranes need be adopted, but the cargo would be transferred by ships' booms and crane boats.

Atlantic Entrance—The system of docks for the Atlantic entrance was begun, and construction is now in progress on two quay walls around Cristobal Point and one pier running parallel with the west quay wall and almost parallel with the channel of the Canal. This pier only will be constructed at this time, although the project provides for five piers, which may be built as the need arises. Plans for the coal storage and handling plant were considered but no decision has yet been reached.

Pacific Entrance—A dry dock behind Sosa Hill, alongside the Canal, marine shops between the dry dock and the Canal, quay walls around the dry dock, in front of the machine shops, and extending along an anchorage basin leading into the Canal, were decided upon for the Pacific entrance during the year. Part of the quay wall, known as the lumber wharf, has been constructed, and preliminary work on the other walls and the dry dock is in progress. No decision was reached on a project for a series of piers jutting from the land into the anchorage basin, although the plan was thoroughly discussed and borings were made to determine the nature of the foundations and of the material that must be dredged.

MILITARY PROTECTION.

Work on the systems of fortifications that will guard both entrances to the Canal was begun during the year. One regiment of infantry was added to the permanent garrison of the Canal Zone which had consisted of a battalion of Marines. The site for the permanent post was fixed, opposite Culebra, on the east side of the Canal on land well drained and accessible both from the Canal and the new line of the Panama railroad.

Wireless communication with the Isthmus was placed under the Navy Department, and plans were made for a system of one high power and three low power stations.

LIGHTING THE CANAL.

Plans for lighting the Canal by beacons and buoys were approved, and work was begun.

Dinner of the 1904 Men.

The fifth annual dinner of the members of the Inca Society, an organization composed of Canal employes, and others, whose term of service with the Canal Commission began during the year 1904, was held at the Hotel Tivoli on Saturday evening, May 4. The dinner has been always held on May 4 in commemoration of the date on which Director Renaudin, representing the new French canal company, formally turned over the Canal property to Captain Mark Brooke, representing the United States Government. The dinner on Saturday night was attended by 47 members, the largest number since the custom of holding these dinners was begun, and included the greater proportion of the 1904 men still on the Isthmus, the record showing 63 as compared with 71 at the same time last year. Col. Tom M. Cooke presided. A committee was appointed to arrange for a suitable emblem for the society. Inasmuch as May 4, 1913, falls on Sunday, it was decided to hold the next dinner on Saturday, May 3.

Those present were: R. W. Unckles, M. B. Connolly, A. B. Nichols, M. W. Tenny, Geo. M. Wells, D. E. Wright, Jr., Dr. C. C. Pierce, Dr. J. C. Perry, Patrick Kenealy, Silas Davidson, W. M. Wood, Dr. A. B. Herrick, D. E. McDonald, Dr. Lloyd Noland, A. A. Lundishef, J. M. Sinclair, Walter Emery, C. L. Galyon, J. J. Reidy, C. M. Butters, Tom M. Cooke, O. S. Boyd, L. E. Dubois, Chas. Parker, E. E. Alexander, Joseph S. Kirk, J. J. Meehan, H. A. Gudger, C. L. Stockelberg, J. J. Moran, Dr. W. H. Bell, C. C. J. Wirz, A. C. Griggs, Lieut. R. D. LaGarde, Frank Loulan, M. C. Pratt, Geo. H. Ruggles, M. L. Padgett, Albert Wiedman, F. E. Moore, W. A. Torbert, D. F. Donahue, Hartley Rowe, Chas. L. Parker, A. P. Mason, W. H. Bates, F. J. Cotton.

Hotel Tivoli Addition About Completed.

The first floor of the new addition to Hotel Tivoli was thrown open to the public for the first time on Sunday, May 5, and the basement floor, which contains the new billiard room, barber shop, bootblacks' parlor, and storage room for baggage, will be occupied this week. The second and third floors of the addition, which are devoted exclusively to guests' rooms, have been in use for some time. The addition provides for 28 more bedrooms, 10 each on the second and third floors; six on the first floor, and two in the basement section. In addition to the bedrooms on the first floor, there is a spacious room, extending the entire width of the addition, which has been temporarily fitted up as a lounging room, with desks for correspondence purposes.

PERSONAL.

Col. C. A. Devol sailed for the States on the *Panama* on May 3 under orders to attend the ninth International Red Cross Conference at Washington, May 7 to 17, as representative of the Canal Zone Red Cross.

Mr. M. H. Thatcher, head of the Department of Civil Administration, accompanied by Mrs. Thatcher, will sail on Thursday on the United Fruit Company's steamer *Parismina*, on his annual leave of absence in the States.

Mr. E. A. Gongwer of Washington, D. C., Auditor of the War Department, accompanied by Mrs. Gongwer, arrived on the Isthmus on the *Cristobal* on Sunday, May 5.

Dynamite.

In the article on the explosives and blasting materials required for the Canal work during the fiscal year beginning July 1, 1912, which appeared in THE CANAL RECORD of May 1, it was stated that the estimated amount of dynamite required amounted to 3,986,500 pounds. This is only the estimated amount of dynamite required for six months, or from July 1, 1912, to the end of the year, and the request for bids was upon this basis. The estimate for the miscellaneous blasting materials, caps, wire, fuse, etc., however, is correct as stated, and is based upon the full fiscal year's requirements.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at the Hotel Tivoli, Ancon, C. Z., Sunday, May 12, 1912 at 8.00 p. m. The program follows:

1. March—*Officer of the Day*..........Hall
2. Selection—*The Paradise of Mahomet*..Planquette and Ganne
3. Waltz—*Golden Sunset*..........Hall
4. Overture—*Summer Night's Dream*........Suppe
5. Popular March—*Take a Tip From Father*..... Berlin & Snyder
6. —*Gems of Stephen Foster*..........Tobani
7. Idyl—*Softly, Unawares*..........Lincke
8. Selection—*The Pink Lady*..........Caryll
9. March—*Col. Estey*..........Bagley

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Gatun, May 19, at 5 p. m.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, May 4, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION				
	Vigia	Alhajuela	Gamboa	Bohio.	Gatun Lake
Sun. April 28...	125.1	91.5	44.0	16.7	16.6
Mon. April 29..	124.9	91.4	43.9	16.6	16.6
Tues. April 30..	124.8	91.2	43.8	16.6	16.6
Wed. May 1..	124.8	91.2	43.7	16.7	16.6
Thurs. May 2.	124 7	91.2	43.6	16.8	16.7
Fri. May 3....	124.8	91.3	43.8	16.8	16.7
Sat. May 4. .	124.8	91.2	43.8	16.8	16.8
Height of low water to the nearest foot...	125.0	91.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending May 15, 1912 (75th meridian time):

DATE.	High	Low	High	Low	High.
	A. M.	A. M.	A. M.	P. M.	P. M.
May 9........	......	3.05	9.12	3.40	9.27
May 10........	.. ..	4.04	10.13	4.43	10.38
May 11........	......	5.05	11.16	5.45	11.46
			P. M.		
May 12.	......	6.02	12.12	6.37	......
May 13........	12.43	6.53	1.00	7.23	......
May 14........	1.30	7.40	1.46	8.09	......
May 15........	2.16	8.25	2.28	8.52	......

DRY SEASON RAINFALL.

Past Season Driest of Record Since American Occupation.

The dry season, now drawing to a close, has been the driest of record on the Isthmus since the American occupation of the Canal Zone, and judging from the records available, probably the driest since the earliest French days. The month of April completes five months of continuous dry weather. During the period from December, 1911, to April, 1912, inclusive, the rainfall at Alhajuela amounted to only 1.02 inches, being the lightest of record at any station on the Isthmus during five consecutive months.

The subjoined table presents the accumulated rainfall at selected stations and for the whole Canal Zone during the dry season of 1912 (December, 1911, to April, 1912, inclusive) compared with the normal rainfall during the same period, and the fall during the dry season of 1910.

It may be noted that the average rainfall in the Canal Zone during the present dry season equals about one-fourth of the normal fall, while the average fall during the same period of 1910 amounted to very nearly double the normal fall.

STATION	Normal Dry Season Rainfall Dec. to Apr.	Years of Record.	Dry Season 1912 Dec. 1911 to Apr. 1912.	Per cent of Normal	Dry Season 1910 Dec. 1909 to Apr. 1910.	Per cent of Normal
Ancon	9.66	15	4.76	49	19.58	203
Culebra	14.60	22	3.85	26	19.53	134
Gamboa	14.16	28	3.01	21	22.34	158
Alhajuela	13.35	13	1.02	8	34.18	256
Gorgona	13.91	8	2.29	16	24.98	180
Colon	23.51	42	6.13	26	49.66	211
Porto Bello	46.20	5	5.61	12	91.57	198
Average for Zone	19.37	..	5.18	27	36.57	188

Rainfall in inches.

WEATHER CONDITIONS, CANAL ZONE, APRIL, 1912.

The unusually warm, dry, windy weather experienced during March continued during the month of April.

There was a marked deficiency in rainfall along the Atlantic Coast and over the upper Chagres basin in the vicinity of Alhajuela. The fall was generally well below normal over the whole Isthmus except at Miraflores, Pedro Miguel and Gatun, where heavy local showers occurred.

All previous maximum temperature records were exceeded during the month at Culebra and Ancon. The maximum temperature at Culebra on the 17th., 96° F., is the highest of record at this station, while the maximum at Ancon on the 7th., 97° F., establishes a new high-temperature record for the Canal Zone. Average temperatures were about two degrees above normal at Culebra and Colon, and the highest of record for the month of April.

The relative humidity was uniform over the Isthmus but well below normal, while the average cloudiness was the lowest of record for April at each of the meteorological stations.

There was a moderate excess in atmospheric pressure, and the wind movement at the various stations was the highest that has been recorded during the month of April since records have been kept.

The following table presents the principal items of meteorological interest for the month.

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind				
		Mean.	Maximum.	Date	Minimum	Date		Total inches	Station average	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date
Colon	29.897	82.8	90	April 20	74	April 18	78	0.75	4.08	6	10,620	N.	33	N.E	Apr. 24
Culebra	29.874	81.4	96	April 17	67	April 2	79	3.14	3.80	4	7,059	N.W	30	N	Apr 25
Ancon	29.865	82.1	97	April 7	69	April 2	78	2.68	2.76	5	6,390	N. W.	25	N	Apr. 5

Rainfall from April 1 to 30, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—			
Ancon	1.85	23	2.68
Balboa	1.40	23	2.88
*Miraflores	1.64	22	4.79
Pedro Miguel	2.60	28	4.23
Rio Grande	1.31	28	3.03
Central Section—			
Culebra	1.22	28	3.14
*Camacho	1.65	20	2.44
Empire	2.06	20	2.64
Gamboa	.24	23	.77
*Juan Mina	.56	20	.86
Alhajuela	.14	20	.20
*El Vigia	.26	23	.37
*Gorgona	.20	13	.71
Frijoles	.44	23	1.19
*Trinidad	1.11	23	3.03
*Monte Lirio	.58	23	1.29
Atlantic Section—			
Gatun	2.93	20	4.18
*Brazos Brook	.34	23	.85
Colon	.25	25	.75
Porto Bello	.15	24	.54
*Bocas del Toro	1.79	30	7.81

*Standard rain gage—Readings at 5 p. m. daily. Automatic rain gage at unstarred stations—Values midnight to midnight.

April Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Average	Years of Record	Rai'y days 1912
Pacific Sec.						
Ancon	3.71	6.34	2.68	2.76	14	5
Balboa	3.63	7.39	2.88	4.09	14	6
Miraflores	5.15	2.86	4.79	3.78	4	7
Pedro Miguel	5.16	5.24	4.23	3.62	5	6
Rio Grande	5.36	6.86	3.03	3.52	8	5
Central Sec.						
Culebra	5.35	4.89	3.14	3.80	22	4
Camacho	6.92	6.98	2.44	3.52	6	6
Empire	4.24	3.93	2.64	3.56	8	6
Gamboa	3.85	4.01	.77	3.54	31	6
Juan Mina	.....	2.53	.86	1.70	2	6
Alhajuela	2.99	4.88	.20	3.22	13	4
El Vigia	2.33	3.40	.37	2.10	4	3
Gorgona	5.79	3.16	.71	2.87	8	5
Frijoles	......	......	1.19	.....	1	8
Trinidad	9.28	3.33	3.03	5.20	5	11
Monte Lirio	7.01	5.27	1.29	4.88	5	13
Atlantic Sec.						
Gatun	4.97	6.38	4.18	4.05	8	12
Brazos Brook	5.59	3.90	.85	3.16	6	13
Colon	3.30	3.06	.75	4.08	42	6
Porto Bello	7.14	6.60	.54	6.56	5	11

FOUND—The person who left a small package of embroidery on the train which left Colon at 4.35 p. m., Thursday, May 2, may have the same by proving property. Mrs. Thos. B. Gardiner, House 45, Paraiso, C. Z.

The following ships arrived at, or departed from the port of Balboa during the week ending May 4:

Arrivals—April 28, *City of Sydney*, from San Francisco; April 29, *Ucayali*, from Callao; April 29, *Guatemala*, from Callao; April 29, *Acapulco*, from San Francisco; May 1, *Trinculo*, from Port Harford; May 3, *Quito*, from Guayaquil.

Departures—April 29, *Riverside*, to San Francisco; April 29, *Pachitea*, to Callao; May 2, *Pleiades* to San Francisco; May 2, *Limari*, to Valparaiso; May 3, *Peru* (P. S. N.) to Guayaquil; May 3, *Ucayali*, to Callao; May 3, *Manavi*, to Buenaventura; May 4, *City of Sydney*, to San Francisco.

OFFICIAL CIRCULARS.

Installation of Tungsten Lamps.

CULEBRA, C. Z., May 6, 1912.

CIRCULAR No. 336–C.

Numerous requests have been made for the installation of tungsten lamps in locations not considered advisable or economical. The following rules will in the future govern the installation of tungsten or other metallic filament lamps for all departments and divisions of the Isthmian Canal Commission and Panama Railroad Company:

1. No additional installations will be made where, on account of existing conditions, the life of metallic filament lamps is so shortened as to render their use uneconomical.
2. No installation of metallic lamps will be made where the expected time of further occupancy of the building is so short as not to warrant the changes in wiring, etc., necessary; and, on this account, no further installations will be made in buildings on the west side of the Canal.
3. No installations will be made except where the metallic filament lamp will be controlled by a wall switch, and, if on a drop cord, where it will hang on a cord of fixed length high enough to prevent injury to the filament by the handling of the lamp.
4. In making installations of the metallic filament lamps the department or division requesting same shall pay the cost of any changes in wiring necessary, the cost of installing wall switches, etc., and shall, in addition, pay for the first installation of metallic filament lamps.
5. The wiring of all permanent buildings shall be arranged for the use of metallic filament lamps.

The foregoing rules will likewise apply to the installation of metallic filament lamps for any other department of the Government or any private individual, with the exception, that if such department or individual desires to use metallic filament lamps under any other than the foregoing standard conditions the same may be permitted with the understanding that such department or individual shall pay not only the cost of the first installation but also for all renewals thereof.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Shop Expense Percentage.

CULEBRA, C. Z., May 3, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

In accordance with the provisions of Circular No. 169–E the following shop expense percentage for each shop is hereby fixed, effective May 1, 1912, and will be applied, until further orders, to the distributed labor used in all shop work, in accordance with the provisions of Circular No. 264–A, viz:

Division or Shop	Shop expense Per cent.
Mechanical Division	37.5
Empire shop	40
Dry Dock shop	40
Balboa shop	40
Porto Bello shop	45
Toro Point shop	50
Panama Railroad shop	30

Previous circular letters from this office, fixing shop expense percentage, are revoked.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Acting Chief Sanitary Officer.

CULEBRA, C. Z., April 29, 1912

CIRCULAR No. 440:

During the absence of Colonel W. C. Gorgas, Chief Sanitary Officer, beginning April 29, 1912, Lieutenant Colonel John L. Phillips is designated as Acting Chief Sanitary Officer.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Chief Quartermaster.

CULEBRA, C. Z., May 3, 1912.

CIRCULAR No. 441:

Effective this date, Captain R. E. Wood will act as Chief Quartermaster during the absence from the Isthmus of Colonel C. A. Devol.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Superintendent of Telegraph and Telephones.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT.
COLON, R. P., May 1, 1912.

TO ALL CONCERNED:

Effective May 1, 1912, Mr. C. L. Bleakley, Acting Superintendent Telegraph and Telephones, is hereby appointed Superintendent Telegraph and Telephones.

J. A. SMITH, *General Superintendent.*

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule of moving picture entertainments for the week May 13 to 18, follows: Monday, Gatun; Tuesday, Cristobal; Wednesday, Gorgona; Thursday, Corozal; Friday, Culebra; Saturday, Empire.

The following is the standing in the pool tournament:

	Won.	Lost.	P. C.
Gatun	16	8	.666
Corozal	13	7	.650
Empire	15	9	.625
Cristobal	7	17	.290
Gorgona	5	15	.250

CULEBRA.

A handball tournament has been organized, and it is desired that every one who has joined come out and practice.

All those that know of good books for the library are requested to leave the name and author at the office.

The Culebra duckpin bowling team took two games from Cristobal, at Culebra on Saturday. Scores:

Culebra.				Cristobal.			
Cornth'aite	76	80	81	Barrett	101	77	94
Sterns	105	78	77	C. Cotton	73	81	87
Brown	76			Orr	80	85	80
Grier	84	92	80	Whittles	77	85	84
Balmer	84	92	82	Weston	95	93	102
Mengel		98	113				
Total	425	440	433		426	421	447

Saturday evening Gatun will bowl at Culebra.

The billiard team will go to Cristobal Saturday evening, May 11.

EMPIRE.

Empire took three straight games from Camp Elliott on the Empire alleys Saturday night, May 4. Scores:

Empire.				Camp Elliott.			
Sawtelle	84			W. Wright	87	83	86
Nelson	86	84	83	Bus	77	96	71
Goolsby	81	101	77	Cataldo	86	80	99
N. Giavolli	91	82	70	Walters	69		
Dakin	93	84	101	McCabe	92	90	77
Gustavson		122	84	Murphy		78	77
Total	435	473	415		411	427	410

The pool and billiard games played between Empire and Gatun on Saturday, May 4, resulted in Empire winning four out of six games of pool and losing two billiard games.

Saturday, May 11, the Corozal indoor baseball team will play at Empire. This will be the last game of the league for Empire.

Twenty-six new library books were received from the States during the past week.

GORGONA.

The following games of duckpins were rolled Saturday night, May 4, between Gatun and Gorgona:

Gorgona.				Gatun.			
Seebt	92	85	95	Dennis	87	89	86
Powell	97	74	84	Mohen	84	89	90
Robertson	80			Huttle'eir	100	93	103
Otis		77	86	Hodges	77	87	84
Moyer	78			Dickson	83	88	75
Miller		95	90				
Dunlop	84	77	96				
Total	431	408	451		431	446	438

The last game of indoor baseball of the season will be played between Gorgona and Culebra at Gorgona, Saturday night, May 11, at 7.45 p. m. Admission free.

The Gorgona Discussion Club will organize a World Congress to meet every Monday night in the game room at 7.45 p. m. All men are invited to attend. Admission free to all sessions of the club and the congress.

Dr. Orenstein will deliver a health talk Sunday night, May 14, at 7 p. m., after the regular sunset song service. Admission free to all. The lecture will be illustrated with stereopticon slides and will be on "Flies and Their Menace to Health."

GATUN.

D. C. Galloway won a handsome cue given as a prize for the ten highest runs in pool during the month of April. There were five 15-ball, two 14, two 13 and one 21-ball runs.

Gorgona took two out of three games of duckpins at Gatun on Saturday, May 4.

One hundred and two new books, recently received from the States were placed on the shelves Saturday, May 4. The books include a full set of Mark Twain's and Shakespeare's works.

On Saturday evening, May 11, Gatun will bowl against Culebra, and play pool and billiards with Corozal at Gatun.

Forty-two students are now enrolled in the Spanish classes.

CRISTOBAL.

On Saturday night the Gatun Y. M. C. A. indoor baseball team won from Cristobal by a score of 25 to 17. The line-up was as follows: *Gatun*—Brown, 1b; Kerruish, 2b; Carr, 3b; Wright, p; Claybourne, ss; Thompson, c; McCullough, f. *Cristobal*—Russell, p; MacSparran c; Simons, 1b; Duff, ss; Cousineau, 2b; Schwallenberg 3b; Mendes f.

On Thursday evening, May 16, Mr. F. J. Bernsee, the star checker player, will be on hand to meet all checker players of the Cristobal Association in simultaneous play. Mr. Bernsee has been granted the privilege of inviting any outside players to play.

On Sunday evening, May 19, at 5.30 o'clock the Colonial Band (colored) will give a concert at the Commission band stand under the auspices of the clubhouse.

Arrangements are being made with the Tenth Regiment Band for a concert in the near future.

On Saturday night, May 11, the Empire duckpin bowling team will play Cristobal on the local alleys.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending May 4, 1912:

Turrialba, April 27, from New York, with 26 packages castings, 93 cases copper bars, for Superintendent of Erection; 66 pieces of lumber, for Mechanical Division; 10,700 pieces hollow tile, for Panama Railroad Company; and 10 cases hardware, for stock.

Mistor, April 28, from New York, with 20 cases of benzine, for stock and 167,194 bags of cement, for Atlantic and Pacific Divisions.

Prinz August Wilhelm, April 29, from New York, with 3 cases of stationery, for stock.

Metapan, May 1, from New York, with 100 pieces of lumber, for Mechanical Division; 17 cases of hardware, 7 cases of packing, 20 bales of life preservers, and 14 pieces of steel bars, for stock

Meltonian, May 1, from Liverpool, with 200 barrels of carbolic acid, for stock.

Alexandrian, May 1, from Liverpool, with 400 barrels of carbolic acid, for stock.

Dinsdale Hall, May 2, from New York, with 121,029 bags of cement, for Atlantic and Pacific Divisions and 248 cases of blasting caps, for stock.

Parismina, May 2, from New Orleans, 136 barrels of fire clay, 98 bags sucrene feed, 36 rolls cotton duck, 140 cases fire brick, 10 cases seats, 3 pieces steam-shovel chain, 64 pieces piping, 6,434 pieces lumber, for stock; 325 tons pig iron, 42 barrels brake shoes, 3,052 pieces lumber, and 3 reels wire cables, for Mechanical Division.

Allianca, May 2, from New York, with 77 bundles steel bars and 63 pieces snubbing posts, for Atlantic Division; 42 pieces snubbing posts for Pacific Division; 250 pieces castings, 50 cases incandescent lamps and 31 barrels iron pins, for Mechanical Division; 32 packages castings, 61 cases castings, for Superintendent of Erection; 27 cases dry goods, 10 cases sundries, for Sanitary Department; 150 barrels paint, 10 bales wool waste, 29 barrels rosin, 100 cases soap, 30 cases glass, 227 coils rope, 62 cases water meters, 250 bundles brooms, 22 reels wire rope, 1,460 pieces pipe, 247 bundles pipe, 834 bundles roofing iron, 31 cases hose, 10 cases varnish, 20 cases picks and 46 cases paper, for stock; and a miscellaneous cargo, the whole consisting of 4,448 packages, weighing 485 tons.

Tivives, May 4, from New York, with 59 packages hose and 21 cases tape fuse, for stock; and 74 cases copper bars, for Superintendent of Erection.

Misdirected Letters.

ANCON, C. Z., May 8, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Bowie, Mrs. Oscar (2 class)
Bowie, William R.
Defew, J. N.
Ellis, Oscar P.
Fluharty, Mrs. Lulu
Gaines, Mrs. Geo. S.
Gallivan, J. D.
Gray, Charles G.
Howell, Mrs. Sarah (2 class)
Hummers, Adolph P.
Janney, P. H.
Kinney, Bert
Kleene, W. F.
Larsen, Arthur (2 class)
Lloyd, John
Lorren, James
McCarthy, Joseph (2 class)
McCoy, W. M.
Peters, F. C.
Robiteon, Edd
Randolph, John T.
Rhodes, Harry
Robinson, Chas. Uriah
Scarlet, Walter
Senane, Jose Maria
Shaffer, F. C.
Sherwood, A. L.
Spencer, George T.
Shute, C. M.
Smith, Hugh
Taber, Mrs. Jean W.
Taylor, Miss Celia
Vults, Mrs. N. P.
Walker, Geo.
Wilson, Geo.
Winquist, Chas.
Wood, R. D.

Married.

STETLER–JOHNSON—At Cristobal, on May 2, Miss Mazy Ethel Johnson of Kappa, Indiana, to Elmer Stetler of Kokomo, Indiana, the Rev. Carl H. Elliott officiating. Canal Zone residence, Ancon.

FENNELL-COX—At Ancon, on May 4, Inez Cox, of Jackson, Mich., to Bailey M. Fennell of Richmond, Va. Isthmian residence, Colon, R. P.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's Line.

NEW YORK TO CRISTOBAL.

Colon	P. R. R.	Saturday	May	4
Advance	P. R. R.	Thursday	May	9
Panama	P. R. R.	Wednesday	May	15
Allianca	P. R. R.	Tuesday	May	21
Colon	P. R. R.	Monday	May	27
Advance	P. R. R.	Monday	June	3
Panama	P. R. R.	Saturday	June	8
Allianca	P. R. R.	Friday	June	14
Colon	P. R. R.	Friday	June	21
Advance	P. R. R.	Thursday	June	27
Panama	P. R. R.	Wednesday	July	3
Allianca	P. R. R.	Tuesday	July	9
Colon	P. R. R.	Monday	July	15

CRISTOBAL TO NEW YORK.

Allianca	P. R. R.	Thursday	May	9
Colon	P. R. R.	Wednesday	May	15
Advance	P. R. R.	Tuesday	May	21
Panama	P. R. R.	Monday	May	27
Allianca	P. R. R.	Sunday	June	2
Colun	P. R. R.	Sunday	June	9
Advance	P. R. R.	Saturday	June	15
Panama	P. R. R.	Friday	June	21
Allianca	P. R. R.	Thursday	June	27
Colon	P. R. R.	Wednesday	July	3
Advance	P. R. R.	Tuesday	July	9
Panama	P. R. R.	Monday	July	15

NEW YORK TO COLON.

Zacapa	U. F. C.	Wednesday	May	1
Sixaola	U. F. C.	Saturday	May	4
Prinz Joachim	H.-A.	Saturday	May	4
Almirante	U. F. C.	Wednesday	May	8
Tagus	R. M.	Saturday	May	11
Prinz Eitel Friedrich	H.-A.	Saturday	May	11
Carillo	U. F. C.	Saturday	May	11
Santa Marta	U. F. C.	Wednesday	May	15
Prinz August Wilhelm	H.-A.	Saturday	May	18
Turrialba	U. F. C.	Saturday	May	18
Metapan	U. F. C.	Wednesday	May	22
Oruba	R. M.	Saturday	May	25
Prinz Sigismund	H.-A.	Saturday	May	25
Tivives	U. F. C.	Saturday	May	25
Zacapa	U. F. C.	Wednesday	May	29
Sixaolo	U. F. C.	Saturday	June	1
Prinz Joachim	H.-A.	Saturday	June	1
Almirante	U. F. C.	Wednesday	June	5
Thames	R. M.	Saturday	June	8
Carrillo	U. F. C.	Saturday	June	8
Prinz Eitel Friedrich	H.-A.	Saturday	June	8

COLON TO NEW YORK.

Metapan	U. F. C.	Thursday	May	9
Prinz Sigismund	H.-A.	Monday	May	13
Orotava	R. M.	Tuesday	May	14
Tivives	U. F. C.	Tuesday	May	14
Zacapa	U. F. C.	Thursday	May	16
Prinz Joachim	H.-A.	Tuesday	May	21
Sixaolo	U. F. C.	Tuesday	May	21
Almirante	U. F. C.	Thursday	May	23
Prinz Eitel Friedrich	H.-A.	Monday	May	27
Thames	R. M.	Tuesday	May	28
Santa Marta	U. F. C.	Thursday	May	30
Turrialba	U. F. C.	Tuesday	June	4
Prinz August Wilhelm	H.-A.	Tuesday	June	4
Metapan	U. F. C.	Thursday	June	6
Prinz Sigismund	H.-A.	Monday	June	10
Trent	R. M.	Thuesday	June	11

NEW ORLEANS TO COLON.

Abangarez	U. F. C.	Saturday	May	4
Heredia	U. F. C.	Wednesday	May	8
Atenas	U. F. C.	Saturday	May	11
Orleanian	U. F. C.	Wednesday	May	15
Parismina	U. F. C.	Saturday	May	18
Cartago	U. F. C.	Wednesday	May	22
Abangarez	U. F. C.	Saturday	May	25

COLON TO NEW ORLEANS.

Parismina	U. F. C.	Thursday	May	9
Cartago	U. F. C.	Thursday	May	9
Abangarez	U. F. C.	Thursday	May	16
Heredia	U. F. C.	Thursday	May	16
Atenas	U. F. C.	Thursday	May	23
Orleanian	U. F. C.	Thursday	May	23

P. R. R. steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 2 p. m.; ships for New York via Kingston, on Tuesdays at 2 p. m. and Thursdays at 11 a. m.; for Bocas del Toro, on Mondays and Tuesdays at 5 p. m.

STATEMENT OF

CONSTRUCTION EXPENDITURES

TO MARCH 31, 1912

(Part II of The Canal Record, May 8, 1912.)

STATEMENT OF CONSTRUCTION EXPENDITURES TO MARCH 31, 1912

Table No. 1.

Includes administrative and general expenses, but does not include "General Items" or expenditures? or sanitation, hospitals, or civil administration.

Items.	Third Quarter, Fiscal Year 1912.			To December 31, 1911			Total to March 31, 1912.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
Atlantic Division—	*Cubic Yards.*								
1 Dry excavation, prism	56,382	$23,330.87	$0.4138	2,125,616	$1,436,366.31	$0.6757	2,181,998	$1,459,697.18	$0.6690
2 Hydraulic excavation, prism				29,605	11,671.32	.3942	29,605	11,671.32	.3942
3 Dredging excavation, prism	985,689	353,408.04	.3585	26,930,264	6,325,750.16	.2349	27,915,953	6,679,158.20	.2393
Gatun Spillway—									
4 Dry excavation				1,544,202	1,096,180.59	$0.7099	1,544,202	1,096,180.59	$0 7099
5 Preparing foundations	2,812	5,223.93	$1.8577	39,301	87,868.59	2.2358	42,113	93,092.52	2.2105
6 Masonry	26,979	183,845.97	6.8144	167,500	1,337,865.21	7.9813	194,479	1,521,711.18	7.8246
7 Ironwork		42,374.62			21,659.14			64,033.76	
8 Back filling				24,713	12,456.18	.5400	24,713	12,456.18	.5400
Total		$231,444.52			$2,556,029.71			2,787,474.23	
Gatun Dam—									
9 Dredging excavation				38,425	$20,041.19	$0.5216	38,425	$20,041.19	$0.5216
10 Dry filling	613,546	$391,867.84	$0.6387	8,741,171	3,738,989.34	.4277	9,354,717	4,130,857.18	.4416
11 Hydraulic filling	628,173	243,337.74	.3874	9,326,466	2,691,653,64	.2886	9,954,639	2,934,991.38	.2948
12 Paving				40,411	14,719.69	.3642	40,411	14,719.69	.3642
Total		$635,205.58			$6,465,403.86			$7,100,609.44	
Gatun Locks—									
13 Dry excavation				4,555,395	3,080,613.71	$0.6763	4,555,395	$3,080,613.71	$0.6763
14 Dredging excavation	544,564	$96,254.16	$0.1768	488,533	126,591.72	.2591	1,033,097	222,845.88	.2157
15 Preparing foundations, excavation		571.88		195,313	391,184.73	2.0029	195,313	391,756.61	2.0029
16 Preparing foundations, filling	*3,600	*3,588 95		76,117	18,815.68	.2472	72,517	15,226.73	.2100
17 Preparing foundations, concrete piling, (lineal feet)	6,030	9,271.75	1.5376	77,640	125,743.87	1.6196	83,670	135,015.62	1.6137
18 Preparing foundations, wooden piling, (lineal feet)				51,450	37,870.41	.7361	51,450	37,870.41	.7361
19 Filling around south approach wall, dry	7,072	3,777.61	.5342				7,072	3,777.61	.5342
20 Filling around south approach wall, hydraulic	328,653	51,295.32	.2737				328,653	51,295.32	.2737
21 Masonry	89,179	811,917.54	9.1044	1,761,345	12,842,194.28	7.2911	1,850,524	13,654,111.82	7.3785
22 Ironwork		227,618.43			1,734,437,76			1,962,056.19	
23 Backfilling	180,977	87,586.64	.4840	1,088,069	563,515.25	.5179	1,269,046	651,101.89	.5131
24 Filling center wall	30,339	26,186.13	.8631	42,165	27,247.88	.6462	72,504	53,434.01	.7370
25 Operating machinery		197,536.83			80,388.84			277,925.67	
Total		$1,508,427.34			$19,028,604.13			$20,537,031.47	
Gatun power plant, (permanent)									
26 Dry excavation				21,835	$13,711.63	$0.6280	21,835	$13,711.63	$0.6280
Gatun-Mindi Levee—									
27 Dry fill				177,158	$68,985.15	$0.3894	177,158	$68,985.15	$0.3894
28 Hydraulic fill				20,398	3,483.32	.1708	20,398	3,483,32	.1708
Total					$72,468.47			$72,468.47	
29 Colon breakwater	164,499	$260,852.86	$1.5857	587,603	$1,145,177.11	$1.9489	752,102	$1,406,029.97	$1.8695
Total construction cost, Atlantic Division		$3,012,669.21			$37,055,182.70			$40,067,851.91	
30 Plant and equipment to be absorbed in construction costs after Mar. 31 1912								$1,631,653.32	
Total expenditures, Atlantic Division								$41,699,505.23	
Central Division—									
31 Dry excavation, prism	4,572,331	$2,353,594.17	$0.5147	[illegible]426,915	$71,851,643.83	$0.8411	89,999,246	$74,205,238.00	$0.8245
32 Clearing Canal line, without excavation (acres)				[illegible]80	139,316.41	61.1037	2,280	139,316.41	[illegible]037
33 Dredging excavation					9,798.40			9,798.40	
34 Masonry				[illegible]1	8,263.45	6.5015	1,271	8,263.45	[illegible]
35 Masonry, cement gun facing (sq. yds.)				4,240	4,169.32	.9810	4,240	4,169.32	[illegible]
Total construction cost Central Division		$2,353,594.17			$72,013,191.41			$74,366,785.58	
36 Plant and equipment to be absorbed in construction costs after March 31 1911								$252,565.05	
Total expenditure, Central Division								$74,619,350.63	
Pacific Division—									
37 Dry excavation, prism	288,002	$204,366.70	$0.7096	649,201	$520,353.81	$0.8015	937,403	$724,720.51	$0.7731
38 Dredging excavation prism	976,997	181,464.78	.1857	30,638,244	7,468,819.91	.2438	31,615,241	7,650,284.69	.2420
39 Hydraulic excavation prism	195,473	123,623.58	.6324	648,507	390,452.58	.6021	843,980	514,076.16	.6091
Pedro Miguel Dam—									
40 Dry excavation	995	$2,575.45	$2.5884	5,224	$7,619.03	$1.4585	6,219	$10,194.48	$1.6392
41 Dry filling	250,022	91,502.55	.3660	318,521	145,902.18	.4581	568,543	237,404.73	.4176
Total		$94,078.00			$153,521.21			$247,599.21	
Pedro Miguel Locks—									
42 Dry excavation	38,625	$10,442.13	$0.2704	1,050,241	$1,007,769.28	$0.9596	1,088,886	$1,018,211.41	$0.9351
43 Preparing foundations	5,606	17,145.85	3.0585	151,096	409,464.29	2.7100	156,702	426,610.14	2.7224
44 Masonry	36,973	279,984.25	7.5727	780,696	4,326,995.10	5.5425	817,669	4,606,979.35	5.6343
45 Ironwork		232,416.34			1,021,907.47			1,254,323.81	
46 Backfilling	80,694	24,540.61	.3041	451,707	191,892.67	.4248	532,401	216,433.28	.4065
47 Filling center wall	1,435	1,774.58	1.1390	17,602	16,091.58	.9142	19,037	17,866.16	.9385
48 Operating machinery		53,755.66			18,489.38			72,245.04	
Total		$620,059.42			$6,992,609.77			$7,612.669,19	
Miraflores East Dam—									
49 Excavation		$9,026.44			$797.66			$9,824.10	
Miraflores West Dam—									
50 Dry filling	87,460	$32,232.08	$0.3685	1,070,377	$554,149.58	$0.5177	1,157,837	$586,381.66	$0.5064
51 Hydraulic filling		1,137.74			30,284.45			31,422.19	
52 Masonry, core wall					429.51			429.51	
53 Dry excavation					19,991.26			19,991.26	
Total		$33,369.82			$604,854.80			$638,224.62	

(**Table 1**—*Continued*)

Items.	Third Quarter, Fiscal Year, 1912.			Total to Dec. 31, 1911.			To March 30, 1912.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
Miroflores Spillway—									
54 Iron work					$1,460.21			$1,460.21	
Miroflores Locks—									
55 Dry excavation, diversions				5,885	2,028.98	$0.3448	5,885	$2,028.98	$0.3448
56 Dry excavation, in locks	111,244	$71,440.23	$0.6422	2,102,238	1,987,014.88	.9452	2,203,482	2,058,455.11	.9342
57 Dredging excavation				309,647	142,379.66	.4598	309,647	142,379.66	.4598
58 Hydraulic excavation				332,703	195,299.02	.5870	332,703	195,299.02	.5870
59 Preparing foundations, excavation	60,143	102,339.08	1.7016	267,904	502,125.21	1 8743	328,047	604,464.29	1.8426
60 Preparing foundations, wooden piles		13,566.22			11,981.96			25,548.18	
61 Masonry	196,015	993,423.68	5.0681	571,860	2,856,834.02	4.9957	767,875	3,850,257.70	5.0142
62 Iron work		92,100.66			718,566 71			810,667 37	
63 Backfilling	122,063	53,734.14	.4402	760,892	204,045.71	.2682	882,955	257,779.85	.2920
64 Operating machinery		38,428.98			17,159.70			55,588.68	
Total		$1,365,032.99			$6,637,435.85			$8,002,468.84	
La Boca Locks and Dams—(abandoned)									
65 Dry excavation				78,233	$158,343.29	$2.0240	78,233	$158,343.29	$2.0240
66 Construction dam					315,350.07			315,350.07	
67 Construction locks					159,306.40			159,306.40	
Total					$632,999.76			$632,999.76	
68 Naos Island breakwater		$1,625.71			$65,305.13			$69,930 84	
69 Terminal Facilities-Permanent, Balboa		$20,887.89						$20,887.89	
Total constructioncost, Pacific Division		$2,656,535.33			$23,468,610 69			$26,125,146 02	
70 Plant and equipment to be absorbed in construction costs after Mar. 31, 1911								$2,036,739 37	
Total expenditures, Pacific Division								$28,161,885.39	
71 Lighting and buoying canal		$49,084.87			$70,307 95			$119,392.82	
Total expenditures, constr. and engr'n'g.								$144,600,134 07	

*Denotes credit.

Item 29—*Colon Breakwater*. Figures shown include fill from Toro Point and large rock from Porto Bello.

Item 33—*Dredging Excavation, Prism*. Preliminary surveys.

Item 35—Operation of cement gun used in facing walls of Cut.

Item 38—*Dredging Excavation, Prism*. With the accounts for the month of April 1911, the total cost of the dredging plant had been absorbed into the work hence no abitrary for plant is charged in this quarter.

Item 51—*Miraflores Dams, Hydraulic Filling*. Expenditures represent cost of pipe lines, flumes, etc. 661,048 cubic yards have been deposited in dams from dredging and hydraulic excavation in lock chambers and in prism below the locks, the total expenditures therefor being charged to "Excavation."

Items 65, 66, and 67—These expenses were incurred prior to the adoption of Miraflores as the site for the lower locks and dams, at the Pacific entrance to the Canal.

Items 30, 36, and 70—*Plant*. The expenditures for plant and equipment are absorbed into construction costs on the basis of estimated total cost of plant, and the estimated quantities of work to be done. The amounts shown under these items represent the balances which are to be absorbed into construction costs after March 31, 1912.

General—When excavated material is used in filling, such as dams, back filling, etc., the cost of dumping only is charged to the items benefited, all other expenses being charged to "Excavation."

DAM CONSTRUCTION.

Table No. 2.

Detailed cost per cubic yard for quarter ending March 31, 1912.

	Gatun Dam.				Miraflores Dam.				Pedro Miguel Dam.			
	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.
Excavation—Quanities—cubic yards									995			995
Excavation by hand									$1.5818			$2.3275
Division expense									.0688			.1039
Total division cost									$1.6506			$2.4314
Administrative and general expense									.0982			.1570
Total cost									$1.7488			$2.5884
Dry Fill—Quanities—cub yards	239,266	145,221	229,059	613,546	24,920	37,970	24,570	87,460	38,044	86,719	125,259	250,022
Clearing site												
Excavation	$0.0534	$0.2241	$0.1762	$0 1396								
Tracks	.0686	.1337	.1075	.0985	$0.1220	$0.0689	$0 1037	$0.0938	$0.0369	$0.0401	$0 0213	$0.0302
Trestles	.0037	.0042	.0022	.0033								
Transportation	.2038	.1393	.0741	.1401	0528	.0397	0480	.0458	0193	.0106	.0188	.0160
Filling	.1079	.1012	.0643	.0900	.0651	.1159	.0777	.0907	.0344	.1602	.1058	.1138
Maintenance of equipment	.0400	.0914	.0661	0620	.0486	.0234	.0296	.0323	.0229	.0082	.0102	.0115
Plant arbitrary	.0262	.0539	.0710	0495	.0900	.0628	.0900	.0782	.2900	.1176	.1997	.1850
Division expense	.0145	.0213	.0188	.0177	.0153	.0075	0115	.0108	.0062	.0034	.0030	.0036
Total division cost	$0.5181	$0.7691	$0.5802	$0.6007	$0 3938	$0.3182	$0 3605	$0 3516	$0.4097	$0.3401	$0.3588	$0 3601
Administrative and general expense	.0252	.0484	.0448	.0380	0201	0126	.0203	0169	.0076	.0055	.0057	0059
Total cost	$0.5433	$0.8175	$0.6250	$0.6387	$0 4139	$0 3308	$0.3808	$0 3685	$0.4173	$0.3456	$0.3645	$0.3660
Hydroulic Fill—Quanities—cubic yards	173,900	211,399	242,874	628,173								
Clearing site												
Clearing for dredge	$0.0235	$0.0118	$0.0047	$0 0123								
Dredging	.1740	.1065	.0963	.1212								
Relay pumps	.0143	.0090	.0142	.0125								
Pipe lines	.0191	.0108	.0157	.0180								
Wood flumes	.0046	.0023	.0009	.0024								
Power	.1066	.0479	.0651	.0708								
Small boats	.0033	.0026	.0026	.0028								
Maintenance of equipment	.0596	.0376	.0252	.0389								
Plant arbitrary	.0850	.0850	.0850	.0850								
Division expense	.0089	.0048	.0054	.0062								
Total division cost	$0.4989	$0.3273	$0.3151	$0.3701								
Administrive and general expense	.0253	.0173	.0115	.0173								
Total cost	$0.5242	$0.3446	$0.3266	$0.3874								

LOCKS AND SPILLWAYS CONSTRUCTION.

Table No. 3.

Detailed cost per cubic yard for quarter ending March 31, 1911:

Items.	Gatun Spillway.				Gatun Locks.				Pedro Miguel Locks.				Miraflores Locks.			
	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.
Dry excavation—Quantities—cubic yards	......	......	......	......	......	......	......	......	20,490	17,215	920	38,625	73,090	30,067	8,087	111,244
Drilling	......	......	......	......	......	......	......	......	......	......	......	......	$0.0734	$0.1235	$0.1598	$0.0932
Blasting	......	......	......	......	......	......	......	......	......	......	......	......	.0577	.0548	.0828	.0588
Loading by power	......	......	......	......	......	......	......	......	$0.1029	$0.0731	$0.1437	$0.0906	.0826	1239	.1340	.0975
Tracks	......	......	......	......	......	......	......	......	.0734	.0110	.0235	.0444	.1069	.1218	.1883	.1168
Transportation	......	......	......	......	......	......	......	......	.0016	.0492	.0501	.0240	.0448	.0641	.0653	.0515
Dumps	......	......	......	......	......	......	......	......	......	......	......	......	......	......	.0014	.0001
Trestles	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Pumps	......	......	......	......	......	......	......	......	.0293	0152	.0161	.0227	.0150	.0446	.0390	.0248
Power	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Maintenance of equipment	......	......	......	......	......	......	......	......	.0687	.0416	.0412	.0559	.0806	.0644	.0615	.0748
Plant arbitrary	......	......	......	......	......	......	......	......	......	......	......	......	.0600	.0600	.0600	.0600
Division expense	......	......	......	......	......	......	......	......	.0121	.0073	.0103	.0100	.0199	.0227	.0229	.0208
Total division cost	......	......	......	......	......	......	......	......	$0.2880	$0.1974	$0.2849	$0.2476	$0.5409	$0.6798	$0.8150	$0.5983
Admin. and general expense	......	......	......	......	......	......	......	......	.0269	.0176	.0284	.0228	.0385	.0523	.0604	.0439
Total cost	......	......	......	......	......	......	......	......	$0.3149	$0 2150	$0.3133	$0.2704	$0.5794	$0.7321	$0.8754	$0.6422
Dry Fill — Approach Wall — Quantities—cubic yds	......	......	......	......	7,072	......	......	7,072	......	......	......	......	......	......	......	......
Filling	......	......	......	......	$0.2884	......	......	$0.2884	......	......	......	......	......	......	......	......
Tracks	......	......	......	......	.0799	......	......	.0799	......	......	......	......	......	......	......	......
Maintenance of Equiptment	......	......	......	......	.0652	......	......	.0652	......	......	......	......	......	......	......	......
Plant Arbitrary	......	......	......	......	.0600	......	......	.0600	......	......	......	......	......	......	......	......
Division Expense	......	......	......	......	.0157	......	......	.0157	......	......	......	......	......	......	......	......
Total Division Cost	......	......	......	......	$0.5092	......	......	$0.5092	......	......	......	......	......	......	......	......
Admin. Gen. Expense	......	......	......	......	.0250	......	......	.0250	......	......	......	......	......	......	......	......
Total cost	......	......	......	......	$0.5342	......	......	$0.5342	......	......	......	......	......	......	......	......
Hydraulic Fill—Approach Wall Quantities, cubic yds	......	......	......	......	48,408	141,230	139,015	328,653	......	......	......	......	......	......	......	......
Opperation Dredges	......	......	......	......	$0.1248	$0.0584	$0.0536	$0.0662	......	......	......	......	......	......	......	......
Repairs to Dredges	......	......	......	......	.0165	.0039	.0072	.0071	......	......	......	......	......	......	......	......
Pipe Lines	......	......	......	......	......	.0037	......	.0016	......	......	......	......	......	......	......	......
Plant Arbitrary	......	......	......	......	.0218	.0850	.0819	.0757	......	......	......	......	......	......	......	......
Division Expenses	......	......	......	......	.0018	.0019	.0011	.0019	......	......	......	......	......	......	......	......
Total Div. Cost	......	......	......	......	$0.1649	$0.1529	$0.1438	$0.1525	......	......	......	......	......	......	......	......
Admin. Gen. Expense	......	......	......	......	.0029	.0041	.0020	.0036	......	......	......	......	......	......	......	......
Total Cost	......	......	......	......	$0.1678	$0.1570	$0.1458	$0.1561	......	......	......	......	......	......	......	......
Dredging Excavation–Quantities cubic yards	......	......	......	......	......	219,311	325,253	544,564	......	......	......	......	......	......	......	......
Operation Suction Dredges	......	......	......	......	......	$0.0977	$0.0906	$0.0998	......	......	......	......	......	......	......	......
Repairs Suction Dredges	......	......	......	......	......	.0328	.0247	.0297	......	......	......	......	......	......	......	......
Pipe Lines	......	......	......	......	......	.0196	.0031	.0098	......	......	......	......	......	......	......	......
Coffer Dams	......	......	......	......	......	......	......	*.0588	......	......	......	......	......	......	......	......
Drilling	......	......	......	......	......	.0013	......	.0014	......	......	......	......	......	......	......	......
Blasting	......	......	......	......	......	.0002	......	.0044	......	......	......	......	......	......	......	......
Plant Abiterary	......	......	......	......	......	.0470	.1156	.0880	......	......	......	......	......	......	......	......
Division Expenses	......	......	......	......	......	.0039	.0028	.0012	......	......	......	......	......	......	......	......
Total Division Cost	......	......	......	......	......	$0.2025	$0.2368	$0.1755	......	......	......	......	......	......	......	......
Admin. and Gen. Expense	......	......	......	......	......	.0103	.0067	.0013	......	......	......	......	......	......	......	......
Total Cost	......	......	......	......	......	$0.2128	$0.2435	$0.1768	......	......	......	......	......	......	......	......
Preparing foundations, excavation—Quantities—cubic yards.	1,330	1,228	254	2,812	......	......	......	......	3,484	1,265	857	5,606	22,519	17,359	20,265	60,143
Drilling	......	......	......	......	......	......	......	......	$0.7958	$0.5927	$0.9534	$0.7741	$0 0640	$0.1090	$0.0637	$0.0769
Blasting	......	......	......	......	......	......	......	......	.1122	2221	.0048	.1205	0505	.0475	.0330	.0437
Loading by power	......	$0.1506	$1 1089	$0.1659	......	......	......	......	......	......	......	......	.0624	.0530	.0523	.0563
Loading by hand	$1.0837	.6879	1 1215	.9143	......	......	......	......	.8403	1.6869	2.3642	1.2643	.7043	1.0248	.8048	.8307
Transportation	......	......	......	......	......	......	......	......	.0012	......	.0672	.0110	.0629	.0528	.0813	.0662
Tracks	......	......	......	......	......	......	......	......	.2845	1894	.3502	.2731	1653	.1725	.0717	.1358
Dumps	......	......	......	......	......	......	......	......	......	......	......	......	.0259	.0490	.0572	.0431
Pumps	......	......	......	......	......	......	......	......	.0293	.0152	.0161	.0241	.0897	.1240	.0347	.0811
Coffer dams	8510	.0947	.1884	.4609	......	......	......	......	......	......	......	......	......	......	......	......
Maintenance of equipment	......	.0065	.0005	.0029	......	......	......	......	.1646	.2326	.2240	.1891	.1250	.0694	.0675	.0896
Plant arbitrary	.0600	.0600	.0600	.0600	......	......	......	......	......	......	......	......	.0600	.0600	.0600	.0600
Division expense	.1199	.0508	.0883	.0868	......	......	......	......	.0941	.1668	.1889	.1250	.0721	.0876	.0589	.0721
Total division cost	$2.1146	$1.0505	$2.5676	$1.6908	......	......	......	......	$2.3220	$3.1057	$4.1688	$2.7812	$1.4821	$1.8496	$1.3851	$1.5555
Admin. and general expense	.1967	.1123	.2747	.1669	......	......	......	......	.1967	.3684	.4704	.2773	.1352	.1795	.1291	.1461
Total cost	$2.3113	$1.1628	$2.8423	$1.8577	......	......	......	......	$2.5187	$3.4741	$4.6392	$3.0585	$1.6173	$2.0291	$1.5142	$1.7016
Preparing foundations, concrete piling—Quantities—lin. ft.	......	......	......	......	......	1,215	4,815	6,030	......	......	......	......	......	......	......	......
Concrete piles in place	......	......	......	......	......	$1.6414	$1.4602	$1 4967	......	......	......	......	......	......	......	......
Maintenance of equipment	......	......	......	......	......	.0144	.0102	.0110	......	......	......	......	......	......	......	......
Division expense	......	......	......	......	......	.0108	.0096	.0098	......	......	......	......	......	......	......	......
Total division cost	......	......	......	......	......	$1.6666	$1.4800	$1.5175	......	......	......	......	......	......	......	......
Admin. and general expense	......	......	......	......	......	.0350	.0162	.0201	......	......	......	......	......	......	......	......
Total cost	......	......	......	......	......	$1.7016	$1.4962	$1.5376	......	......	......	......	......	......	......	......
Preparing foundations, wooden piling—Quanities—lin. ft.	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Wooden piles in place	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Maintenance of equipment	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Division expense	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Total division cost	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Admin. and general expense	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Totalcost	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......

Table No. 3—(*Continued*)

Items.	Gatun Spillway.				Gatun Locks.				Pedro Miguel Locks.				Miraflores Locks.			
	Jan.	Feb	Mar.	Total.	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.
Masonry.																
Concrete—Quantities—cubic yds.	8,733	10,204	7,806	26,743	28,778	21,071	20,877	70,726	8,810	8,597	4,145	21,552	47,309	62,207	80,314	189,830
Cement	$1.7352	$1.7465	$1.8197	$1 7642	$1.6730	$1.8562	$1.7852	$1.7607	$0.9951	$2.3503	$0.8311	$1.5042	$1.8031	$2.1629	$1.7566	$1.9014
Stone	2.0038	2.0648	1.8431	1.9802	1.9432	1.8870	1.8367	1.8950	.7700	.7905	.6850	.7618	.7719	.7905	.7161	.7544
Sand	1.0625	1 0301	.9552	1 0188	1.3194	1.1455	.9636	1.1626	.3658	.3525	.3254	.3527	.3666	.3525	.3384	.3500
Mixing	.1966	.2077	.2295	.2104	.2560	.2386	.1773	.2276	.3837	.4003	.4350	.4002	.2443	.1877	.2420	.2248
Total cost	$4.9981	$5.0491	$4.8475	$4.9736	$5.1916	$5.1273	$4.7628	$5.0459	$2.5146	$3.8936	$2.2765	$3 0189	$3 1859	$3.4936	$3.0531	$3.2306
Large Rock—Quantities—cubic yards	90	64	......	154	28	......	......	28	......	......	......	......	......	......	......	......
Cost	$5.3115	$1.0984	......	$3.5606	$3.9718	......	......	$3.9718	......	......	......	......	......	......	......	......
Masonry—Quantities—cubic yards	8,823	10,268	7,806	26,897	28,806	21,071	20,877	70,754	8,810	8,597	4,145	21,552	47,309	62,207	80,314	189,830
Concrete	$4.9471	$5.0177	$4.8475	$4.9451	$5.1867	$5.1273	$4.7628	$5.0439	$2.5146	$3.8936	$2.2765	$3.0189	$3.1859	$3.4936	$3.0531	$3.2306
Large rock	.0542	.0068	......	.0204	.0038	......	......	.0016	......	......	......	......	......	......	......	......
Wood forms	.5448	.3259	.4279	.4273	.6454	.7958	.5744	.6693	.8293	1.0992	1 7447	1.1130	.4992	.3659	.3292	.3836
Steel forms	......	......	......	......	.1221	.1327	.1192	.1244	.0001	......	......	......	.0461	0558	.0491	.0506
Placing	.4358	.3453	.4412	.4028	.5746	.8270	.6039	.6584	.5863	.6093	.9535	6661	2081	.1853	.2109	.2018
Reinforcements	.0074	......	......	.0024	.0118	0367	.0235	.0226	......	......	......	......	......	......	......	......
Pumps	.0006	......	......	.0002	.1169	.0296	.0427	.0690	.0293	.0152	.0161	.0212	.0150	.0446	.0390	.0349
Power	......	......	......	......	.1037	.1102	.1010	.1049	.0081	.0121	.0154	.0111	.0440	.0337	.0292	.0343
Coffer dams	.0428	.0038	.0021	.0161	......	......	......	......	......	......	......	......	......	......	......	......
Maintenance of equipment	.3105	.1925	.2093	.2361	.1881	.2268	.2000	.2031	.1630	.0932	.1636	.1353	1871	.1248	.1359	.1450
Plant arbitrary	.4360	.4360	.4360	.4360	.9670	.9670	.9670	.9670	.5689	.5697	.5715	.5697	.5500	.5500	.5500	.5500
Division expense	.0743	.0474	.0703	.0629	.1135	.1068	.1047	.1089	.1173	.1152	.1389	.1206	.0730	.0551	.0508	.0577
Total division cost	$6.8535	$6.3754	$6.4343	$6.5493	$8.0336	$8.3599	$7.4992	$7.9731	$4.8169	$6.4075	$5.8802	$5.6559	$4.8084	$4.9088	$4 4472	$4.6885
Admin. and general expense	.3106	.2056	.2459	.2517	.2926	.3829	.2835	.3168	.2527	.3710	.4363	.3352	.2329	.2076	.2101	.2150
Total cost	$7.1641	$6.5810	$6.6802	$6.8010	$8.3262	$8.7428	$7.7827	$8.2899	$5.0696	$6.7785	$6.3165	$5.9911	$5 0413	$5.1164	$4.6573	$4.9035
Masonry, reinforced—Quantities—cubic yards	82	......	......	82	6,177	5,593	6,655	18,425	6,193	4,042	5,186	15,421	1,107	1,686	3,392	6,185
Cement	$1.7305	......	......	$1.7305	$2.5355	$2.5112	$2.4360	$2.4921	$2.3712	$2.6048	$2.1305	$2.3515	$1 8440	$3 0088	$1.2273	$1.8233
Stone	2.0104	......	......	2.0104	2.0825	2.0163	1.8000	1.9603	.7387	.7566	.6876	.7262	.7393	.7562	.6853	.7143
Sand	1.0513	......	......	1.0513	1.2602	1.0926	.9466	1.0960	.3432	.3299	.3168	.3308	.3431	.3302	.3167	.3252
Mixing	.1967	......	......	.1967	.4323	.5765	.3324	.4400	.3527	.4235	.5092	.4239	.7596	.5094	.6843	.6502
Wood forms	2.1778	......	......	2.1778	2.6004	2.7015	2.5011	2.5953	1.5293	2.3210	2.2290	1.9721	3.0937	2.3060	.8874	1.6690
Steel forms	......	......	......	......	.1307	.0259	.0766	.0794	......	......	......	......	.5115	2.2333	.8845	1.1854
Power	......	......	......	......	.0202	.0376	.0304	.0293	.0095	.0073	.0076	.0083	.0060	.0160	.0108	.0113
Placing	.8604	......	......	.8604	.6011	.7362	.7985	.7134	.6572	.8152	.8995	.7801	1.0469	1.0526	.4005	.6940
Reinforcements	1.3250	......	......	1.5557	.6677	.4392	1.0587	.7396	1.4437	1.9276	1.2898	1.5188	.5125	1.9326	1.6228	1.5083
Pumps	......	......	......	......	......	......	......	......	.0293	.0152	.0161	.0211	.0010	.0449	.0390	.0338
Maintenance of equipment	.3137	......	......	.3136	.1857	.1358	.1538	.1590	.1850	.1065	.1362	.1480	.0488	.0759	.0756	.0709
Plant arbitrary	.4360	......	......	.4360	9670	.9670	.9672	.9670	.5703	.5697	.5699	.5700	.5500	.5500	.5499	.5503
Division expense	.3154	......	......	.3289	.2466	.2078	.2233	.2264	.2073	.2673	.2160	.2260	.3391	.2910	.1614	.2285
Total division cost	10.4172	......	......	10.6613	11.7299	11.4476	11.3246	11.4978	$8.4374	10.1446	$9.0082	$9 0768	$9.7955	13.1069	$7.5455	$9.4642
Admin. and general expense	.5117	......	......	.5414	.7245	.7719	.7110	.7340	.5938	.7611	.7976	.7062	7701	.8724	.5124	.6566
Total cost	10.9289	......	......	11.2027	12.4544	12.2195	12.0356	12.2318	$9.0312	10.9057	$9.8058	$9.7830	10.5656	13.9793	$8.0579	$10.1208
Total Masonry—Quantities—cubic yards	8,905	10,268	7,806	26,979	34,983	26,664	27,532	89,179	15,003	12,639	9,331	36,973	48,416	63,893	83,706	196,015
Total cost	$7.1987	$6.5832	$6.6802	$6.8144	$9.0551	$9.4721	$8.8108	$9.1044	$6.7049	$8.0984	$8.2558	$7.5727	$5.1677	$5.3503	$4.7951	$5.0681
Back filling—Quantities—cubic yards	......	......	......	......	68,663	51,229	61,085	180,977	29,312	33,175	18,207	80,694	38,733	35,170	48,160	122,063
Drilling	......	......	......	......	$0.0232	$0.0225	$0.0154	$0.0204	......	......	......	......	......	......	......	......
Blasting	......	......	......	......	0262	.0432	0289	.0319	......	......	......	......	......	......	......	......
Loading	......	......	......	......	0243	.0343	0362	.0312	......	......	......	......	......	......	......	......
Tracks	......	......	......	......	.0588	.0483	.0343	.0475	$0.0559	$0 0538	$0.0072	$0.0440	$0.1232	$0.1841	$0.0993	$0.1596
Transportation	......	......	......	......	0750	.0879	.0659	.0756	.0304	0239	.0442	.0309	.0452	.0969	.0538	.0352
Filling	......	......	......	......	.0810	.1416	.1512	.1218	.0860	.0566	.1446	.0872	0489	.0737	.0462	.0550
Maintenance of equipment	......	......	......	......	.0484	.0515	.0359	.0450	.0304	.0163	.0222	0227	.0314	.0449	.0235	.0322
Plant arbitrary	......	......	......	......	0510	.0684	.0551	.0574	.0900	0900	.0900	.0900	.1200	.1200	.1200	.1200
Division e¯pense	......	......	......	......	.0152	.0177	.0191	.0172	.0114	.0078	.0093	0094	0132	.0164	.0093	.0126
Total division cost	......	......	......	......	$0.4031	$0.5154	$0.4420	$0.4480	$0.3041	$0.2484	$0.3175	$0.2842	$0.3819	$0.5360	$0.3521	$0.4146
Admin. and general expense	......	......	......	......	.0301	.0458	.0342	.0360	.0206	.0172	.0236	.0199	.0227	.0355	.0209	.0256
Total cost	......	......	......	......	$0.4332	$0.5612	$0.4762	$0.4840	$0.3247	$0.2656	$0.3411	$0.3041	$0.4046	$0.5715	$0.3730	$0.4402
Filling center wall—Quantit'.-—cubic yards	......	......	......	......	6,892	18,775	4,672	30,339	1,435	......	......	1,435	......	......	......	......
Loading	......	......	......	......	$0.1184	$0.1000	$0.0904	$0.1027	......	......	......	......	......	......	......	......
Tracks	......	......	......	......	.1150	.0483	.0461	.0631	......	......	......	......	......	......	......	......
Transportation	......	......	......	......	.1777	.0599	.2165	.1108	$0.3724	......	......	$0.3724	......	......	......	......
Filling	......	......	......	......	.3315	.0540	.0890	.1224	.0942	......	......	.0942	......	......	......	......
Power	......	......	......	......	......	......	......	......	.0220	......	......	.0220	......	......	......	......
Maintenance of eqiupment	......	......	......	......	.0931	0750	.0911	.0816	.3428	......	......	.3428	......	......	......	......
Plant arbitrary	......	......	......	......	.3310	.3310	.3310	.3310	.1146	......	......	.1146	......	......	......	......
Division expense	......	......	......	......	.0355	.0109	.0212	.0181	.0760	......	......	.0760	......	......	......	......
Total division cost	......	......	......	......	$1.2022	$0.6791	$0.8853	$0.8297	$1.0220	......	......	$1.0220	......	......	......	......
Admin. and general expense	......	......	......	......	.0569	.0242	.0360	.0334	.1170	......	......	.1170	......	......	......	......
Total cost	......	......	......	......	$1.2591	$0.7033	$0.9213	$0.8631	$1.1390	......	......	$1.1390	......	......	......	......

DRY EXCAVATION—PRISM.

Table No. 4.

Detailed cost per cubic yard for quarter ending March 31, 1912.

Items.	Atlantic Division.				Central Division.				Pacific Division.			
	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total
Dry excavation—Quantities—cubic yards	33,165	23,217	....	56,382	1,435,853	1,404,902	1,702,169	4,542,924	48,406	70,646	118,950	288,002
Clearing			....	......	$0.0001	$0.0002	....	$0.0001	....	$0.0335	$0.0001*	$0.0082
Drilling	$0.0146*	$0.0353*	....	$0.0231*	.0555	0494	$0.0439	.0492	$0.0725	.0870	.0990	.0744
Blasting	0396	.0048	....	.0250	.0704	0617	.0567	.0626	0570	.0379	.0513	.0400
Loading	.0635	.0683	....	.0717	.0486	.0515	.0446	.0480	.0993	.1110	.1146	.0912
Tracks	.0166	.0217	....	.0854*	.0934	0824	.0733	.0825	.1035	.1380	.2213	.1427
Transportation	1279	.1297	....	.1286	.0599	0757	.0653	.0668	.0723	.0654	.0665	.0557
Dumps	......	......	....	......	.0477	0438	.0428	.0447	.0153	.0002	.0009	.0004
Pumps	.0210	.0343	....	.0343	.0037	.0040	.0037	.0038	....	.0355	.0496	.0318
Maintenance of equipment	.2329	0471	....	.1518	.0798	.0931	.0794	.0837	.0993	.0606	.0566	.0549
Plant arbitrary	.0600	.0600	....	0600	.0300	.0300	.0300	.0300	.1900	.1900	.1918	.1578
Division expense	.0111	.0150	....	.0147	.0128	0113	.0101	.0114	.0229	.0228	.0196	.0175
Total division cost	$0.5580	$0.3456	....	$0.3776	$0.5019	$0.5031	$0.4498	$0.4828	$0.7321	$0.7819	$0.8711	$0.6746
Administrative and general expense	.0302	.0360	....	.0362	.0347	.0370	.0283	.0330	.0346	.0422	.0455	.0350
Total cost	$0.5882	$0.3816	....	$0.4138	$0.5366	$0.5401	$0.4781	$0.5158	$0.7667	$0.8241	$0.9166	$0.7096
Dry excavation—Prism, by contract—Quantities—cubic yards	......	......	....	....	8,539	10,812	10,056	29,407	....	....	....	....
Contract cost	......	......	....	....	$0.3555	$0.3400	$0.3143	$0.3270	....	....	....	.....
Plant arbitrary	......	......	....	....	.0300	.0300	.0300	.0300	....	....	....	....
Total cost	......	......	....	....	$0.3855	$0.3700	$0.3443	$0.3570	....	....	....	...
Total dry excavation—Quantites—cubic yards	33,165	23,217	....	56,382	1,444,392	1,415,714	1,712,225	4,572,331	48,406	70,646	118,950	28[illegible]02
Unit cost	$0.5882	$0.3816	....	$0.4138	$0.5355	$0.5388	$0.4773	$0.5147	$0.7667	$0.8241	$0.9166	$0.7[illegible]96

*Denotes credit.

DREDGING EXCAVATION—PRISM.

Table No. 5.

Detailed cost per cubic yard for quarter ending March 31, 1912:

Items.	Atlantic Division.								Pacific Division.							
	January.		February.		March.		Total.		January.		February.		March.		Total.	
	Quantities, cu. yds.	Unit cost	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.
Clearing	438,993	$0.0007	362,088	$0.0008	184,608	$0.0011	985,689	$0.0008	......	......	......	......	......	......	......	......
Op'n, seagoing suction dredge	294,120	.0344	210,786	.0445	40,033	.0232	544,939	.0375	187,889	$0.0473	252,143	$0.0394	267,542	$0.0409	707,574	$0.0421
R'p'rs, seagoing suction dredge	294,120	.0057	210,786	.0102	40,033	6856	544,939	0574	187,889	.0326	252,143	.0100	267,542	.0100	707,574	.0160
Operation, ladder dredges	104,637	.0751	101,578	.0739	100,308	.0715	306,523	0735	56,632	.1119	92,492	.1059	35,829	.1765	184,953	.1214
Repairs, ladder dredges	104,637	.0302	101,578	0221	100,308	.0183	306,523	.0236	56,632	.0295	92,492	.0286	35,829	.0337	184,953	.0298
Operation, dipper dredges	41,969	.1525	49,724	.1167	44,267	.1348	135,960	.1336	29,912	.1268	27,246	.1225	27,312	.1376	84,470	.1289
Repairs, dipper dredges	41,969	0991	49,724	0849	44,267	.1851	135,960	.1219	29,912	.0726	27,246	.0989	27,312	.0702	84,470	.0803
Operation, pipe line dredges	†1,733	*1 2780		......	......	......	†1,733	*1.2780	......	......	......	......	......	......	......	......
Repairs, pipe line dredges	†1,733			......	......	......	†1,733	......	......	......	......	......	......	......	......	......
Pipe lines	......			......	......	......	......	......	......	......	......	......	......	......	......	......
Dykes	......			......	......	......	......	......	......	......	......	......	......	......	......	......
Op'n, tugs, clapets and scows	146,606	0899	151,302	.0838	144,575	.0865	442,483	.0867	86,544	.0614	119,738	.0786	63,141	.0569	269,423	.0680
R'p'rs, tugs, clapets, and scows	146,606	0874	151,302	.0649	144,575	0409	442,483	.0645	86,544	.0209	119,738	.0236	63,141	.0265	269,423	.0274
Drilling	24,888	1969	40,928	.1163	47,981	.1707	113,797	.1569	......	......	......	......	......	......	......	......
Blasting	24,888	1656	40,928	1802	47,981	.1673	113,797	.1716	35,745	.0011	......	......	......	......	126,103	.0003
Operation, drill barges	......			......	......	......	......	......	35,745	2728	51,922	.1968	38,436	.2239	126,103	.2266
Operation, rock breakers	......			......	......	......	......	......	35,745	.0387	51,922	.0224	38,436	.0399	126,103	.0324
Small boats	438,993	0023	362,088	.0023	184.[illegible]8	0057	985,689	0029	274,433	.0057	371,881	.0045	330,683	.0042	976,997	.0047
Repairs, misc. equipment	438,993	0010	362,088	0015	184.6[illegible]	.0048	985,689	.0019	274,433	.0073	371,881	.0098	330,683	.0246	976,997	.0141
Plant arbitrary	438,993	0557	362,088	0470	184,608	.0263	985,689	.0470	274,433	......	371,881	..	330,683	......	976,997	......
Division expense	438,993	0088	372,088	0071	184,608	.0185	985,689	.0100	274,433	0049	371,881	0049	330,683	.0034	976,997	.0044
Total division cost	438,993	$0.2922	362,088	$0.2626	184,608	$0.5580	985,689	$0.3311	274,433	$0.1901	371,881	$0.1688	330,683	$0.1599	976,997	$0.1717
Admin. and general expense	438,993	0246	362,088	.0226	184,608	0438	985,689	.0274	274,433	.0141	371,881	.0125	330,683	.0155	976,997	.0140
Total cost	438,993	$0.3168	362,088	$0.2852	184,608	$0.6018	985,689	$0.3585	274,433	$0.2042	371,881	$0.1813	330,683	$0.1754	976,997	$0.1857
Earth excavation—per cent.	414,105	94.33	321,160	88.70	136,627	74.01	871,892	88.46	238,688	86.97	319,959	86.04	292,247	88.38	850,894	87.09
Rock excavation—per cent.	24,888	5.67	40,928	11.30	47,981	25.99	113,797	11.54	35,745	13.03	51,922	13.96	38,436	11.62	126,103	12.91

*Denotes credit.
†Charged to Dredging Excavation—Prism in error.

STONE PRODUCTION.

Table No. 6.

Detailed cost per cubic yard for quarter ending March 31, 1912.

	Porto Bello Quarry.				Ancon Quarry.			
	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.
Quarrying—Quantities—cubic yards	46,585	41,493	47 282	135,360	59,043	51,081	99,523	209,647
Stripping	**$0.0148***	$0.0212		$0.0014	$0.0979	$0.1431	$0.0609	$0.0914
Drilling	.0422	.0473	$0.0267	.0383	.0803	.0461	.0439	.0547
Blasting	.1476	.1445	.0987	.1297	.0567	.0566	0418	.0496
Loading	.0584	.0785	0656	.0670	.0446	.0234	.0271	.0312
Transportation	.0507	.0618	0537	.0551	.0462	.0860	.0616	.0632
Tracks	.0324	.0253	.0302	.0295	.0323	.0542	.0333	.0381
Power	.0328	.0365	.0311	.0333				
Maintenance of equipment	.0608	.1086	**.0232***	.0461	.0578	0614	.0436	.0519
Plant arbitrary	.6660	.6660	.6660	.6660	.1500	1500	.1500	.1500
Total	$1.0761	$1.1897	$0.9488	$1.0664	$0.5658	$0.6208	$0.4622	$0.5301
Crushing—Quantities—cubic yards	46,585	41,493	47,282	135,360	59,043	51,081	99,523	209,647
Operation, crushers	$0 0188	$0.0209	$0.0205	$0.0201	$0 0189	$0.0235	$0.0236	$0.0222
Stone bins and conveyors	.0183	.0135	.0090	.0136	.0042	.0048	.0057	0051
Power	.0408	.0453	.0387	.0414	.0200	.0209	.0193	.0199
Maintenance of equipment	.0967	.0556	.0552	.0696	.0383	0387	.0144	.0271
Plant arbitrary	.3430	.3430	.3430	.3430	.0469	.0474	.0467	.0469
Total	$0.5176	$0.4783	$0.4664	$0.4877	$0.1283	$0.1353	$0.1097	$0.1212
Total cost of production	$1.5937	$1.6650	$1.4152	$1.5541	$0.6941	$0 7561	$0 5719	$0.6513
Towing—Quantities—cubic yards	46,585	41,493	47,282	135,360				
Operation, tugs and barges	$0 1463	$0 1473	$0.1341	$0.1423				
Maintenance of equipment	1520	1781	.0930	.1394				
Plant arbitrary	1190	.1190	1190	.1190				
Total	$0.4173	$0 4444	$0.3461	$0 4067				
Unloading—Quantities—cubic yards	46,585	41,493	47,282	135,360				
Operation, cableways and cranes	$0.1028	$0 0988	$0.0825	$0.0945				
Power	.0232	.0302	.0261	0263				
Maintenance of equipment	.0625	.0559	.0395	0524				
Plant arbitrary	.4530	.4530	.4530	.4530				
Total	$0.6415	$0.6379	$0.6011	$0 6262				
Rail transportation to storage—Quantities—cubic yards	10,519	8,501	10,485	20,505	59,043	51,081	99,523	209,647
Operation of trains	$0.2787	$0 1835	$0.0566	$0 2480	$0.0427	$0.0428	$0.0368	$0.0399
Repairs to tracks	.0341	.0058		.0199				
Dumping in storage					0128	.0122	.0115	.0120
Maintenance of equipment	.2770	.1294	.0610	.2269	.0298	0187	.0148	.0200
Plant arbitrary					0500	0500	.0500	.0500
Total	$0.5898	$0.3187	$0.1176	$0.4948	$0.1353	$0.1237	$0.1131	$0.1219
Division expense	$0.0206	$0.0196	$0.0184	$0.0195	$0.0264	$0.0254	$0.0148	$0.0206
Total cost in storage	$2.8059	$2.8352	$2.4068	$2.6755	$0.8558	$0 9052	$0.6998	$0.7938

*Denotes Credit.

SAND PRODUCTION.

Table No. 7.

Detailed cost per cubic yard for quarter ending March 31, 1912.

Items.	Nombre de Dios.				Chamé.			
	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.
Dredging—Quantities—cubic yards					50,287	48,389	51,138	149,814
Operation, dredges					$0.0746	$0.0754	$0.0808	$0.0770
Maintenance of equipment					.0175	.0379	.0227	.0258
Total					$0.0921	$0.1133	$0.1035	$0.1028
Plant arbitrary					$0.0100	$0.0100	$0 0100	$0.0100
Total cost of production					$0.1021	$0.1233	$0.1135	$0.1128
Towing—Quantities—cubic yards					50,287	48,389	51,138	149,817
Operation, tugs and barges					$0.0874	$0.0786	$0.0841	$0 0834
Maintenance of equipment					.0392	.0368	.0588	.0451
Plant arbitrary					.0200	.0200	.0200	0200
Total					$0.1466	$0 1354	$0 1629	$0.1485
Unloading—Quantities—cubic yards					50,287	48,389	51,138	149,814
Operation, cableways and cranes					$0.0623	$0.0569	$0.0687	$0.0628
Power					.0202	0174	.0164	.0180
Maintenance of equipment					.0205	0377	0171	.0249
Plant arbitrary					.0343	0336	.0333	.0337
Total					$0.1373	$0.1456	$0 1355	$0.1394
Rail Transportation to Storage—Quantities—cubic yards					50,287	48,389	51,138	149,814
Operation of trains					$0.0358	$0.0352	$0.0375	$0.0362
Repairs to tracks					.0314	.0311	.0260	.0295
Dumping in storage					.0101	.0100	0082	.0094
Maintenance of equipment					.0264	.0159	0156	.0193
Plant arbitrary					.0700	.0700	0700	.0700
Total					$0.1737	$0.1622	$0 1573	$0.1644
Division expense					$0.0107	$0.0126	$0.0139	$0.0124
Total cost in storage					$0.5704	$0.5791	$0.5831	$0.5775

HYDRAULIC EXCAVATION—PRISM.

Table No. 8.

Detailed cost per cubic yard for quarter ending March 31, 1912.

Items.	Atlantic Division.				Pacific Division.			
	Jan.	Feb.	Mar.	Total.	Jan.	Feb.	Mar.	Total.
Quantities—cubic yards	....	....	....	....	60,302	60,915	74,256	195,473
Clearing	....	....	....	....	....	....	....	....
Drilling	....	....	....	....	....	....	$0.0025	$0.0010
Blasting	....	....	....	....	$0 0021	0.0007	.0007	.0011
Pumping station	....	....	....	....	.1216	.0850	.0981	.1013
Pipe lines and monitors	....	....	....	....	.0896	.0708	.0159	.0557
Dredging pumps	....	....	....	....	.0546	.0907	.0598	.0678
Relay pumps	....	....	....	....	....	....	....	....
Dykes	....	....	....	....	.0318	.0266	.0146	.0237
Maintenance of equipment	....	....	....	....	.0953	.0833	.1267	.1035
Power	....	....	....	....	.1563	.1231	.1229	.1332
Plant arbitrary	....	....	....	....	.1080	.1045	.1042	.1055
Division expense	....	....	....	....	.0141	.0143	.0096	.0124
Total division cost	....	....	....	....	$0 6734	$0.5990	$0.5550	$0.6052
Administrative and general expense	....	....	....	....	.0308	.0275	.0240	.0272
Total cost	....	....	....	....	$0.7042	$0.6265	$0.5790	$0.6324

COLON BREAKWATER.

Table No. 9.

Items.	Colon Breakwater.			
	Jan.	Feb.	Mar.	Total.
Toro Point Fill.				
Excavation—Quantities—Cubic yards	48,423	42,927	48,401	139,751
Surveys	....	....	....	....
Clearing	....	....	....	....
Drilling	$0.0097	$0.0132	$0.0072	$0.0099
Blasting	.0330	.0538	.0541	.0467
Loading by power	.0749	.0693	.0902	.0785
Tracks	.0268	.0149	0194	.0206
Transportation	.0784	.0828	0610	.0737
Maintenance of equipment	.0309	.0283	0590	.0398
Total	$0 2537	$0.2623	$0.2909	$0.2692
Filling—Quantities—Cubic yards	48,423	42,927	48,401	139,751
Trestles	$0 3130	$0.5160	$0.4366	$0.4182
Dumping	0107	.0106	.0090	.0100
Maintenance of equipment	0109	.0060	.0047	.0072
Total	$0.3346	$0.5326	$0.4503	$0.4354
Plant arbitrary	$0.2960	$0 2960	$0.2960	$0.2960
Division expense	.0210	0175	.0187	.0192
Tug service	.0798	.0821	.0648	.0753
Total division cost	$0.9851	$1.1905	$1.1207	$1.0951
Administrative and general expenses	0915	.1094	.0785	0925
Total cost filling	$1 0766	$1.2999	$1 1992	$1.1876
Porto Bello Large Rock.				
Quarrying—Quantities—cubic yards	7,287	8,393	9,068	24,748
Stripping	$0.3944	$0.3765	$0.1674	$0 3051
Drilling	.1329	.0946	.1752	.1354
Blasting	.3033	.2403	.2028	.2452
Loading	.2626	.3396	.3917	.3360
Transportation	.2252	.1756	2301	.2102
Porto Bello Large Rock—*Continued.*				
Tracks	.2147	.2183	.2250	2197
Loading on barges	.1439	.1262	.1351	.1346
Power	.0464	.0399	.0360	.0404
Maintenance of equipment	.3163	.3174	4000	.3473
Plant arbitrary	2340	.2340	.2340	.2340
Total	$2.2737	$2.1624	$2.1973	$2.2079
Towing—Quantities—cubic yards	7,287	8,393	9,068	24,748
Operation, tugs and barges	$0.3094	$0.2577	$0.3054	$0.2904
Maintenance of equipment	.1612	.1225	.0482	.1067
Plant arbitrary	.4040	.4040	.4040	.4040
Total	$0.8746	$0.7842	$0.7576	$0.8011
Placing—Quantities—cubic yards	7,287	8,393	9,068	24,748
Operation of floating derricks	....	....	....	....
Operation, cranes	$0.1391	$0.1437	$0.1743	$0.1536
Operation, trains	.0398	.0299	.0966	.0573
Dumping	.0014	.0347	.0163	.0181
Maintenance of equipment	.0426	.0462	.1222	.0730
Plant arbitrary	.1290	.1290	.1290	.1290
Total	$0.3519	$0.3835	$0.5384	$0.4310
Division expense	$0.1288	$0.1121	$0.1200	$0.1199
Total division cost	$3.6290	$3.4422	$3.6133	$3.5599
Administrative and general expense	.2819	.2939	.2491	.2740
Total cost, large rock	$3.9109	$3.7361	$3.8624	$3.8339
Total material placed—Quantities—cubic yds.	55,710	51,320	57,469	164,499
Total cost	$1.4473	$1.6983	$1.6194	$1.5857

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, MAY 15, 1912. No. 38.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

First Test of Lock Gate Operating Machines.

The miter gate moving machinery for the first leaf completed in the construction of the Canal was tested in operation of the leaf on May 13, at 9.30 a. m. The west leaf of the upper guard gate in the east chamber of Gatun Locks was swung from halfway position to closure, opened fully, closed, and drawn back to halfway position. The complete revolution of the bull wheel, a strut from which moves the gate, occupied one minute and forty-eight seconds, which is 12 seconds less than the time required in the specifications. The machinery, a description of which was published in THE CANAL RECORD of April 26, 1911, worked perfectly, swinging the 448 tons of steel in the gate proper, which is 54 feet high, 65 feet long and 7 feet thick, under perfect control, and without noise or vibration. The operation was witnessed by a number of officials and engineers whose work has been connected with the construction of the Locks, gate, and operating machinery. A photographer for a cinematograph company was present and procured photographs of the gate in motion.

Record Rainfall at Ancon.

The heaviest rainfall of record at Ancon for 24 consecutive hours began at 3.45 Sunday afternoon, May 12, when a total of 7.23 inches of rain fell. During the period from 3.45 to 6.10 p. m., when the rain was the heaviest, the fall amounted to 6.30 inches. From the time it began raining to 5½ hours afterward, the fall amounted to 7.05 inches. The rain came from a southerly direction, and was accompanied by variable winds, although during the period of heaviest fall, the wind was from the south with a maximum velocity of 20 miles an hour. At Balboa, the rainfall approximated that at Ancon, the record showing a total of about seven inches for the 24-hour period, but as the storm went inland the rain decreased, stopping north of Empire. The rainfall at Pedro Miguel was over three inches; at Culebra 1.43 inches; and at Empire about one inch. There have been heavier rainfalls for 24-hour periods at Bohio, Colon, Porto Bello, and other points, but the heaviest rainfall previous to this time, at Ancon, was on November 16 and 17 1906, when 6.37 inches fell during 24 consecutive hours. The greatest rainfall of record on the Isthmus, for 24 consecutive hours, occurred at Porto Bello, on December 28 and 29, 1909, when 10.86 inches of rain fell.

Bridge Approaches Damaged by High Water.

High water in the Cardenas River, a small stream emptying into the Rio Grande, between Corozal and Miraflores, caused by the heavy rain on Sunday, May 12, brought down a mass of brushwood that found lodgment on the upstream side of the wagon bridge on the Zone road, thereby forming a dam that backed up and diverted the water against the earth approaches to the bridge. A section of the north approach about 25 feet long, and a section of the south approach about 40 feet long, were carried away. The material in the approaches was comparatively soft, having been in place only about a year. The water rose to such a height that it flowed over the bridge, but no damage was done to the structure, except the tearing off, at one end, of a section of the pipe railing.

Closing of Charcoal Kiln.

The charcoal plant at Gorgona has discontinued operations, with a stock on hand sufficient for a year's supply. Since April, 1911, thirty kilns have been burned, producing 350,229 pounds. The cost of this, including the erection of the kilns, was $1,592.76. The average cost of producing charcoal was 45½ cents per hundred pounds; the two last kilns cost 29 cents per hundred pounds. The price of charcoal a year ago was $1.10 per hundredweight, at which, the amount produced in the year past would have cost $3,852.52, so that the saving effected by the operations of the plant amounted to $2,259,76. The principal use of charcoal in the Canal and railroad work is in starting fires in locomotives and steamshovels.

Drilling and Blasting in Culebra Cut.

The 142 tripod drills, at work in varying material in Culebra Cut, made a total penetration of 146,766 linear feet during the month of March, an average of 39.5 feet per drill each day. The number of drill days was 3,716. The 77 well drills in 1,177.2 drill days penetrated 75,013 linear feet, a rate of 42.3 feet per drill per day. The average for both kinds of drills was 40.4 linear feet per drill per day. Fifteen tripod drills, working exclusively in hard rock, penetrated 11,095 feet in 378 drill days, or 29.4 feet per drill per day. The working day is nine hours. These penetrations are regarded as an index of the normal drilling operations in the Cut. In blasting, 17,532 holes were exploded in various sorts of material. The aggregate depth of the holes was 303,010 linear feet, the average depth was 17.3 feet. In all, 363,670 pounds of dynamite were exploded, an average of 20.7 pounds per hole. The average efficiency of the blasting during the month, in all kinds of material, was 2.14 cubic yards per pound of explosive.

Arrival of Cranes for Balboa Pier.

Shipments of material for the eight 4-ton electric cargo-handling cranes for the steel pier at Balboa, contract for which was awarded the Maine Electric Company in July, 1911, have begun to arrive, and the work of erecting the two first at the southern end of the pier is in progress. The new cranes will take the place of the ten French cranes now in use on the pier. The latter will be dismantled and stored.

Extension of Hydraulic Excavation.

The lagoon, formed by throwing a dike across the partly excavated Pacific entrance channel, at a point about a mile south of the Agua Dulce hydraulic pressure plant, has been pumped out, and a monitor, operating near the pump, has begun hydraulic excavation in the mile-long stretch of channel cut off by the dike. Other monitors are at work immediately north of this section.

Canal Visitors, Season of 1911–12.

The season in which the people from the United States and foreign countries visit the Canal in the greatest numbers is included in the dry months, namely, December, January, February, March and April. There is less travel to the Isthmus in December than in any of the other four months, as the majority do not plan their trips until after the holidays are over. By the end of April, which usually signalizes the beginning of spring operations in the countries from which most of the visitors come, the travel slackens, although there are small parties or individual sightseers on the Isthmus in all months of the year. A larger number of people from the United States and abroad visited the Canal during the season of 1911–1912 than at any other time since the beginning of operations by the Americans. The record shows that February was the principal travel month, and during that month more ships docked at the ports of Cristobal and Colon than in any previous month in their history. The number was 103. All visitors are classed in the record of port operations as "in transit", and as near as can be estimated, about 95 per cent of the total under this head, who landed at Colon or Cristobal, were Canal sight-seers. The increase of visitors during the five months above mentioned was about 60 per cent over the corresponding period in 1910–11. The following table shows the number of transit passen-

NOTES OF PROGRESS.

(*Continued.*)

gers who landed at Cristobal and Colon from December 1, 1911 to May 1, 1912, together with the figures for the corresponding period in 1910–11:

1910–11		1911–12.	
December, 1910...	1,479	December, 1911....	1,605
January, 1911.....	1,368	January, 1912.....	2,261
February, 1911....	2,567	February, 1912....	4,249
March, 1911......	3,434	March, 1912......	3,836
April, 1911.......	1,001	April, 1912	2,691
Totals..........	9,849		14,642

The increase in the number of transit passengers during the past dry season over the previous one, as shown by the above table is 5,793. Deducting 5 per cent from the totals of each dry season will give 9,357 Canal visitors for the 1910–11 season, and 13,910 for that of 1911–12.

The transit passengers who land on the Pacific side do not figure largely in the tourist class. There has been one large party of visitors from California, but aside from this, the transit passengers have been mostly people going through. Many from the western part of the United States go east to join the steamship tours to the tropics, which, at the present time, include a visit to the Canal as a part of their itinerary.

Severe Wind Storm at Bas Obispo and Vicinity.

A severe wind and rain storm occurred at Bas Obispo and Matachin on Tuesday evening, May 14, unroofing several houses and breaking down trees. Telegraph and telephone communication was interrupted, the roof of a house falling across the wires at Bas Obispo carrying them down for a distance of about one-half mile. Another long break was caused near Matachin by a tree falling across the line.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 88 per cent completed, 197,765 cubic yards, out of a total of 225,000, having been placed at the close of work on May 11. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
May 6................	88	5.30	1
May 7................	28	1.30	1
May 8................	80	4.00	1
May 9................	120	7.00	2
May 10................	68	4.00	1
May 11................	38	2.45	1
Total................	422	24.45	1.17
Previously reported ..	197,343		
Grand total............	197,765		

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending May 11:

DATE.	Hours worked.	Cubic Yards.
May 6..........................	13.15	4,989
May 7..........................	11.50	4,885
May 8..........................	10.05	4,091
May 9..........................	11.20	4,279
May 10..........................	11.25	4,987
May 11..........................	11 00	4,196
Total..........................	68.55	27,427

The steamer *Francis H. Leggett*, loaded with 1,400,000 feet B. M., Oregon pine, with the schooner *Meteor* in tow, with 800,000 feet, has arrived at Balboa, and the cargoes are being discharged. It is expected that the *Leggett* and tow will sail for the north on May 16.

The Panama Railroad Company has discontinued supplying water to vessels at Balboa, Colon and Cristobal, except in quantities that may be needed to reach the next port, and has notified the steamship companies that it may become necessary to stop supplying any water at all. The sale of coal, which was discontinued on account of the strike of bituminous workers, has been resumed.

CONCRETE WORK IN THE LOCKS.

About 84 per cent of the concrete for the locks is in place, the amount at the close of work on May 11 being 3,638,112½ cubic yards, out of a total of approximately 4,303,486. A total of 25,806 cubic yards of concrete was laid in the locks during the week ending May 11.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on May 11 being 1,870,194½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending May 11, and of the total follows; and a similar statement for the work in the spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds*	*Cu. Yds.*
May 5..........................	184	3.00	2	....	....	......	....	184
May 6..........................	556	9.38	4	....	....	......	....	590
May 7..........................	518	8.08	4	....	....	......	....	518
May 8..........................	290	4.52	4	....	....	......	....	290
May 9..........................	120	2.04	2	....	....	......	....	120
May 10..........................	166	2.04	2	....	....	......	....	187
May 11..........................	174	3.04	2	....	....	......	....	205
*Portable mixer................	....	....	......	86	....	......	....	....
Totals..........................	2,008	32.10	2.86	86	....	......	....	2,094
Previously reported............	....	....	......	....	....	......	....	1,868,100½
Grand total....................	....	....	......	....	....	......	....	1,870,194½

The 86 yards shown for the portable mixer are reinforced concrete, and were placed on the following days: May 6, 34; May 10, 21; May 11, 31.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 93 per cent completed, 841,095 cubic yards, out of a total of 890,750, bucket measurement, having been placed at the close of work on May 11. The record for each of the six working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
May 6..........................	196	4.00	1	235	19.00	4	....	431
May 7..........................	208	5.25	1	274	23 00	3	....	482
May 8..........................	162	4.00	1	244	23.00	5	....	406
May 9..........................	126	3.25	1	272	22.25	5	....	398
May 10..........................	90	2.50	1	53	7.00	3	....	143
May 11..........................	88	3.00	1	173	20.00	5	....	261
Total..........................	870	22.00	1	1,251	114.25	4.12	....	2,121
Previously reported............	....	....	......	....	....	......	4,423	838,974
Grand total....................	....	....	......	....	....	......	4,423	841,095

MIRAFLORES LOCKS.

Over 65 per cent of the concrete for the system of two twin locks at Miraflores was in place on May 11, the total amount on that date being 926,823 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds*	*Cu. Yds.*
May 6.....	1,822	43.50	8	1,314	18.25	2	542	37.50	7	....	3,678
May 7.....	1,868	50.00	8	1,428	20.30	2	478	35.50	5	....	3,774
May 8.....	1,916	51.00	8	1,136	10.58	2	553	39.00	6	....	3,605
May 9.....	1,530	44.67	8	1,378	17.33	3	583	41.00	6	....	3,491
May 10....	1,720	45.33	8	1,322	22.00	3	621	42.00	6	....	3,663
May 11....	1,674	49.67	8	1,342	20.34	3	364	33.50	5	....	3,380
Total....	10,530	284.17	8	7,920	108.80	2.5	3,141	228.50	5.83	....	21,591
Previously reported..	....	....	......	....	....	......	....	....	......	3,693	905,232
Grand total......	....	....	......	....	....	......	....	....	......	3,693	926,823

SHORTAGE OF WATER SUPPLY.

Emergency Measures Necessary, Because of Long Dry Season.

The past dry season, with the minimum recorded rainfall for an equivalent period, has subjected the water-supplying facilities of the Canal Zone to unprecedented strain. Emergency measures have been necessary to maintain the system for Cristobal and Colon, and that for the inland villages of Gorgona, Matachin, Bas Obispo, Las Cascadas, and part of Empire. For the Rio-Grande-Panama system the supply from the Rio Grande reservoir has been supplemented by pumping from Cocoli Lake. The installation of an auxiliary system of pumps and filters for this purpose was completed during the latter part of 1909. On the morning of May 12, Rio Grande reservoir and Cocoli Lake together contained enough water to supply the towns and the construction work on the Pacific slope of the continental divide for at least forty days. During the afternoon and evening of that day such heavy rainfall occurred over the watersheds of these reservoirs that the dry season for the southern portion of the Canal Zone was effectually broken and no concern need be felt for the adequacy of the water supply.

In the areas supplied by the Camacho and Carabali reservoirs, however, the situation has been more difficult. Since January 24, the Camacho system, extending from West Culebra to Bas Obispo, inclusive, and supplying a part of Culebra Cut, has used, in part, water from the Chagres River, forced up by two 3-stage, 8 inch centrifugal pumps, mounted on the south channel pier of the railroad bridge at Gamboa. Under full operation these pumps can supply 3,000,000 gallons daily. This quantity is ample for the drains on the Camacho system. Due to the supply of the Carabali reservoir being exhausted the towns of Gorgona and Matachin have been supplied with mains leading from the pumps at Gamboa bridge. The installation of 3,000 feet of 6-inch pipe for this purpose was completed on March 13. In addition to this supply, two pumps were installed on the Chagres for supplying water for industrial uses in the Gorgona shops. One additional condenser was installed to furnish the native town with condensed water.

The pumping plants at Tabernilla and Frijoles which supplied the villages of San Pablo, Barbacoas, Tabernilla and Frijoles have been removed, due to construction work being complete to Gorgona, and the materials stored at the water service storehouse, Empire.

The flow of water from the Brazos Brook reservoir was cut off from Cristobal on May 9, when the surface of the water came within 2 feet 9 inches of the top of the lowest outlet at the reservoir. Between 35,000,000 and 40,000,000 gallons remain available for Colon consumption only. For some time the water has been so low that it would not flow by gravity to Mount Hope, but had to be pumped. When the reservoir is full to its capacity of 650,000,000 gallons, the surface of the water is 20 feet above the outlets. For three months past, water has been pumped into the mains from the East Diversion, at Mindi. Until two weeks ago it was filtered, when the filtration was omitted, in order to save the wash water, which amounts to about 300,000 gallons a day.

Cristobal is supplied with water hauled from Gatun in barges and pumped into the mains through connections made at Dock 13. The Panama railroad tug *Phoenix* is tied up there and pumps the water from the holds of the barges brought alongside. The barges are filled with water from the Agua Clara plant, supplying Gatun, New Gatun and Spillway, which has the largest reserve on the Isthmus, and towed through the French canal to Mindi, thence along the American Canal to Dock 13. Five barges, formerly in the cement service, and one 1,000-ton rock barge, are used for this purpose, supplying daily about 600,000 gallons of water. This arrangement was put into effect on May 10, and has been fairly satisfactory. There are interruptions of the pressure when the barges are changed, but this is partly obviated by increasing the pressure just before effecting a change, and by the head of water afforded by the 75,000-gallon tank in the Panama railroad yards at Cristobal. Switching engines only are supplied from this tank, all the main line locomotives taking water at Gatun.

For four months, water has been hauled in clapets to Toro Point from Gatun. One clapet is in use at a time, making a daily trip with about 120,000 gallons. Porto Bello is being supplied with one 65,000-gallon barge a day from the same source. Agua Clara reservoir has in it now about 190,000,000 gallons, sufficient to meet the present unusual demands on it for a period of 45 days without rain.

Inasmuch as the rainy season has opened, the strain of the situation has passed, except between West Culebra and Gorgona, and in Colon and Cristobal. It is not likely ever to be as bad again, not only because the past dry season has been phenomenal, but also, because the population of the Zone villages and the extent of the construction work will decrease from this time to the completion of the Canal.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Inspectors at the Administration building, Ancon, on May 22. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration building at 8 a.m., on May 22, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their ability properly to operate an automobile, and must have the automobile with them.

Knights Templar.

All Knights Templar in good standing are invited to be present at the institution of Canal Zone Commandery, U. D. Knights Templar, Saturday, May 18, at 8.15 p. m., at Las Cascadas.

Notice to Mariners.

I am advised that an uncharted pinnacle rock has been found lying in the channel between Taboga and Tortola Islands. The rock has a least depth of 18 feet at mean lower low water, or 16 feet at the lowest tides observed. It is about 70 yards in diameter, and is on the summit of a small bank with 32 to 35 feet at M.L.L.W., surrounded by greater depths (45 to 50 feet).

Sextant angles locating rock—San José Rock to C. & G. S. signal on Tortola Island 29: 31. Signal on Tortola Island to lighthouse, Melones Island 109: 57.

Ships should avoid this locality.

J. St. C. Hunt, *Port Captain.*

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of April, follows:

Destination.	Number Cars.	Cubic Yards.
Pacific Division	2,941	48,547
Atlantic Division	10	230
Central Division	18	270
Quartermaster's Department	4	98
Lighthouse Service	2	46
Fortifications	73	1,679
Panama Railroad Company	2	50
Miscellaneous	13	325
Total	3,063	51,245

Obituary.

Charles Higley, an employe of the Atlantic Division, living at Las Cascadas, died at Ancon Hospital, on May 4. He was 43 years of age, married, and has been on the Isthmus three and one-half years, coming here from Iowa. He is survived by his wife, now living at Las Cascadas.

Suicide.

George C. Gill, a member of Company D of the Tenth Infantry, committed suicide with carbolic acid near Camp Otis, on May 5. He was 25 years of age, single, and had been on the Isthmus seven months, coming here from Greenville, Texas.

BASEBALL.

The Culebra baseball team which has been playing independently during the past season, defeated the Commissary-Subsistence team, winner of the pennant in the Panama Canal League for the season of 1911-12, in a six-inning game at Empire park on Sunday afternoon, May 12. Summary:

C.-S.	AB.	H.	PO.	A.	E.
Buch'an,cf.	2	0	0	0	0
Curtis,3b..	3	1	1	0	0
Smith,ss...	3	1	2	1	0
Mosher,rf..	2	1	0	1	0
Pardue,lf..	2	0	0	1	0
Weiss,lb...	2	0	6	0	2
Herring,2b.	2	0	0	1	0
Sterner,c....	1	1	6	1	0
Beard,rf...	1	0	0	0	0
Davis,p.....	1	0	0	3	0
Totals....	19	4	15	8	2

Culebra	AB.	H.	PO.	A.	E.
VanZ'dt,lf	3	1	0	0	0
Do'h'ty,2b	3	1	1	1	1
Hayes,3b.	2	1	0	1	0
Clem'ts,cf	3	1	2	0	0
Herring,rf	2	1	0	0	0
Hepler,1b.	1	0	6	0	1
Cushing,c.	2	1	5	1	0
Fl'sh'n,s..	2	1	1	1	1
Barnes,p..	2	0	0	2	0
	20	7	15	6	3

Com-Sub	1	0	0	0	2	3
Culebra	4	0	0	0	0	4

Game called in the sixth inning, on account of rain, with one man out.

Earned runs—Com-Sub., 1; Culebra, 4. Two base hits—Van Zandt, Hayes, Fleishman. Home runs—Clements. Stolen bases—Dougherty, Hayes, C. O. Herring, Fleishman, Curtis 2. Sacrifice hits—Pardue, Weiss. Base on balls—off Davis, 1; off Barnes, 3. Left on bases—Com.-Sub., 7; Culebra, 3. Wild pitches—Davis, 1. First base on errors—Com.-Sub. 2; Culebra 1. Hit by pitcher—By Davis, Helper; by Barnes, Herring and Sterner. Hits off Davis—3 in 3 innings, off Mosher 1 in 2 innings. Time of game—1 hour, 5 minutes. Umpire—Mr. Markley. Scorer—Garrett.

The following ships arrived or departed from the port of Balboa during the week ending May 11:

Arrivals—May 5, *Sonoma*, from north; May 5, *Chile*, from Guayaquil; May 5, *Rupanco*, from Buenaventura. May 7, *Mantaro*, from Callao; May 8, *Huasco*, from Valparaiso; May 9, *Leelanaw*, from San Francisco.

Departures—May 5, *City of Sidney*, to San Francisco; May 6, *Guatemala*, to Callao; May 8, *Aztec*, to San Francisco; May 8, *Quito*, to Guayaquil; May 8, *Sonoma*, to north; May 10, *Acapulco*, to San Francisco.

Lost—Watch fob and locket, on Sunday, May 12, between Panama railroad station and Ancon Hospital grounds. Finder will please communicate with A. W. Borgen, Box 358, Gorgona.

CANAL MEDAL AND SERVICE BAR LIST.

Below are published the names of American employes of the Isthmian Canal Commission, who completed six years of continuous service on the Isthmus during the twelve months ending December 31, 1911, and are in consequence entitled to receive a second service bar for their Canal Medal. The date shown opposite each name is that on which medal service was completed.

The list is now published in order that it may be carefully checked by those interested. Any omissions, errors in spelling of names, or in the dates from which service is reckoned, should be promptly reported to the Office of the Chairman, at Culebra, for correction.

On this page will be found also a part of the list of employes of the Panama Railroad Company who completed two years of continuous service some time during the past year and are entitled to medals.

The heads of divisions are requested to check carefully their lists of American employes on the silver roll, and to report any omissions on the medal or bar lists to the above office.

Second Service Bar List I.C.C.

Name. 1911.	*Bar due.*
Frarow, Peter	Jan. 2
Loulan, Frank	Jan. 4
McIlvaine, Cloyd A	Jan. 4
Power, William L	Jan. 7
Frank, Gus	Jan. 10
Follman, M. A	Jan. 11
Mackereth, Adelaide P	Jan. 11
Warren, Rudolph G	Jan. 11
Waldrop, John P	Jan. 12
Reid, Howard M	Jan. 16
Corrigan, Joseph A	Jan. 17
King, John M	Jan. 17
Russell, Genevieve	Jan. 17
Kyte, John P	Jan. 25
Atterbury, Thomas C	Feb. 2
Hathaway, Milton S	Feb. 2
Shady, Raymond C	Feb. 2
Smith, John H., Jr	Feb. 2
Duey, Charles W	Feb. 6
Ash, Eugene H	Feb. 7
Beck, Edgar P	Feb. 7
Greene, Frank E	Feb. 7
Guderian, Frederick	Feb. 7
Hubbard, Edward L	Feb. 7
Trachler, Gustav	Feb. 7
Lucchesi, Arthur P	Feb. 9
Burke, John	Feb. 13
Van Zant, C. L	Feb. 15
Miracle, Frank W	Feb. 21
De La Vergne, John C	Feb. 23
White, Samuel M	Feb. 23
Gudger, Hezekiah A	Feb. 24
Willson, Lewis E	Feb. 27
Wilson, Richard W	Feb. 27
Crafts, Charles P	Feb. 28
Darling, Samuel T	Feb. 28
Eason, John J	Feb. 28
Forman, Jacob C	Feb. 28
Fox, William	Feb. 28
Palmer, George W. A	Feb. 28
Mulverhill, John F	Mar. 1
McLean, John H	Mar. 7
Stevens, Fletcher	Mar. 7
Talty, John W	Mar. 7
Borg, Hemke	Mar. 14
Ergenzinger, William J	Mar. 14
Bovay, Harry E	Mar. 15
Haskins, William C	Mar. 19
Bell, Florence	Mar. 21
Willson, Fred D	Mar. 21
Benninger, Sherman A	Mar. 22
Connor, Edward B	Mar. 22
Edholm, Karl	Mar. 22
Lyons, Mary V	Mar. 22
Moreny, Vincent	Mar. 24
Cornish, Frank L	Mar. 28
Kirk, George E	Mar. 28
Ninas, George A	Mar. 28
Turner, Frederick G	Mar. 28
Geddes, Albert H	April 1
Mattimore, Harry B	April 3
Avery, James A	April 7
Haywood, Harry A	April 7
Keller, John C	April 10
Miller, Albert F	April 10
Swinehart, Charles M	April 10
Geddes, Claude R	April 12
Haines, Abram L	April 12
Hostetter, Harlan O	April 12
MacCormack, Daniel W	April 12
Campbell, Charles R	April 17
Day, Frank E	April 17
Maxon, William E	April 17
Shipley, William F	April 17
St. Clair, Dan	April 17
Tucker, James E	April 17
Vance, DeWitt C	April 17
Warner, Anselm M	April 17
Wood, Robert E	April 17
Kingsbury, Augustus H	April 19
Cohen, Jacob	April 24
Daly, Owen M	April 24
Fitzpatrick, Frank	April 24
Rogers, Alfred E	April 24
Stanton, Wilbor D	April 24
Warren, Horace P	April 24
Ashton, William F	April 25
Ensey, Charles R	April 25
Harrod, Ernest E	April 25
Cornwell, Albert E	April 29
Halloran, George B	April 29
Huntoon, Robert J	April 29
Booth, Rufus K	May 5
Cantwell, Matthew D	May 5
Griley, Michael A	May 5
Webster, J. Leon	May 5
Bradberry, Randall T	May 10
Ellerbe, John C	May 10
Leydecker, F. W	May 10
O'Neill, Daniel	May 10
Harrison, William	May 11
Start, Arthur E	May 11
Ferebee, Frank B	May 15
Johnson, Peter	May 15
Metzger, Fred O	May 15
Sessions, Arthur C	May 15
Walker, Clement	May 15
Schwartz, Henry., Jr	May 18
Evans, Arthur K	May 23
Smith, Jay M	May 23
Bitley, Ernest L	May 29
Finley, Lee L	May 29
Mansfield, Henry C	May 29
Leason, Harry	May 30
Bottenfield, F. M. Drake	May 31
Leassenhop, Herbert S	May 31
Thompson, William L	May 31
Grant, Kyern	June 1
Brown, John R	June 2
Mitchell, Hugh	June 4
Preston, Perry B	June 4
Robinson, Arthur L	June 4
O'Brien, Thomas	June 9
Seegar, Joseph	June 12
Malsbury, Omer E	June 13
Tipton, George W	June 13
Middleton, Nicholas B	June 16
Goodfellow, Robert C	June 17
Tobin, Edwin	June 17
Unckles, Roderick W	June 19
White, Walter J	June 21
Simpson, Stephen S	June 22
Wilson, Paul S	June 22
Flynn, John H., Jr	June 23
Leonard, Edward	June 28
Lowe, William E	June 28
Sawtelle, Harrie W	June 28
Larson, Leander	July 1
Mitchel, Edward W	July 1
O'Neal, Lucius A	July 5
Van Hardeveld, John A	July 5
Perry, Wilbur S	July 6
Potts, Frederick A	July 6
Kendall, Charles E	July 7
Swanson, Frederick G	July 7
Mealer, Charles L	July 8
Atkins, John	July 11
Blackhurst, John	July 11
Clemen., Charles C	July 11
Faure, Ad	July 11
Fowler, Jay Frank	July 11
Humphreys, James T	July 11
Fairbanks, Helen G	July 12
Grove, Blanche	July 12
Hale, David Jones	July 12
Potter, Russell B	July 12
Vaughn, Emmett I	July 12
White, Mark	July 12
de Lavandeyra, Jose	July 16
Fleming, Harry V	July 16
Hughes, Charles R	July 17
Jenkins, Ben	July 17
Latchford, Stephen	July 17
Morris, Robert K	July 17
LeMay, E. A	July 19
Whitaker, Charles L	July 19
Cotton, Arthur E	July 22
Gilkey, Lloyd L	July 24
Jackson, John J	July 26
Strong, George W	July 26
Phillips, John L	July 27
Austin, Charles B	July 29
Carpenter, Marcy H	Aug. 1
Feld, Frederick A	Aug. 1
King, James O	Aug. 1
Floyd, Frank	Aug. 6
Baxter, John K	Aug. 9
Hehn, Mary	Aug. 9
Keeling, Edward A	Aug. 9
Lupfer, Cambridge M	Aug. 9
Manley, William G	Aug. 9
Mullin, John W	Aug. 9
Tragsdorf, William E	Aug. 9
Whyte, Walter J	Aug. 9
March, Joseph B	Aug. 10
Young, John D	Aug. 11
Banks, Charles H	Aug. 14
Comber, W. G	Aug. 14
Douglas, Gavin	Aug. 14
Dunning, William E	Aug. 14
Garrison, Edgar S	Aug. 14
Goldsmith, Edwin	Aug. 14
Greeley, Horace L	Aug. 14
Murphy, Robert E	Aug. 14
Owens, Charles T	Aug. 14
Singer, John S	Aug. 14
Smith, Drew E	Aug. 14
Stewart, Frederick F	Aug. 14
Hunter, Charles D	Aug. 15
Whitney, Gorge A	Aug. 15
Grissom, James T	Aug. 19
Lawrence, Wilber S	Aug. 19
Palmer, Eugene W	Aug. 19
Williamson, Norman E	Aug. 19
Evans, Forrest M	Aug. 25
Farmer, Alfred G	Aug. 25
Hayes, Charles G	Aug. 25
Price, Elmer E	Aug. 25
Rosenbaum, Alex. R	Aug. 25
Roudabush, Robert M	Aug. 25
Sands, Robert M	Aug. 25
Holden, George	Aug. 26
McGown, Arthur	Aug. 30
Farish, H. S	Sept. 1
Wirtz, William	Sept. 1
Wynne, Joseph	Sept. 1
Garcon, Edward J	Sept. 4
Dillon, Vesper C	Sept. 5
Sine, Elwood P	Sept. 5
Stevenson, Jesse H	Sept. 6
Nolan, Joseph J	Sept. 12
Owens, John	Sept. 12
Stanton, Charles J	Sept. 12
Stephens, Walter E	Sept. 12
Gilmore, Clarence E	Sept. 16
Barte, George A	Sept. 19
Erickson, Arthur E	Sept. 20
Selby, F. Payne	Sept. 20
Simmons, Clinton O	Sept. 21
Robertson, William T	Sept. 22
Hackenberg, Austin L	Sept. 23
Patterson, William O	Sept. 23
Vanderpool, J. H	Sept. 23
Butz, Leonard	Sept. 25
Hunt, Maud H. B	Sept. 30
Otis, Harry W	Sept. 30
Pender, Walter I	Sept. 30
Sheridan, Patrick L	Sept. 30
Sisson, Benjamin F	Sept. 30
Sonneman, Otto F	Sept. 30
Frost, Julia M	Oct. 1
Sims, Eli	Oct. 3
Close, Joseph A	Oct. 10
Ferber, Louise A	Oct. 10
Green, W. H	Oct. 10
Huston, J. Frank	Oct. 10
Metcalf, Christopher C	Oct. 10
Sims, William E	Oct. 10
Storm, William H	Oct. 10
Weems, Mandville A	Oct. 11
Berger, Albert	Oct. 14
Caldwell, B. W	Oct. 14
Curtis, Karl P	Oct. 14
Lincoln, L. F., Sr	Oct. 14
Eno, Harry	Oct. 15
Wise, James L	Oct. 16
Custy, Thomas	Oct. 17
Holliday, Mary	Oct. 21
Dewling, Andrew W	Oct. 23
Gibson, John K	Oct. 23
Storla, John L	Oct. 23
Carroll, Lon N	Oct. 31
Gorham, George H	Oct. 31
Groves, Richard B	Nov. 1
Bates, John P	Nov. 3
Lynn, William Joseph	Nov. 6
Crabtree, George H	Nov. 7
Quimby, E. Frederick	Nov. 7
Spalding, Walter J	Nov. 7
Vandegrift, Luella	Nov. 7
Williams, Harold P	Nov. 7
Smith, Thomas H	Nov. 8
Becker, Emil	Nov. 13
Hearne, Charles A	Nov. 13
Herman, Albert O	Nov. 13
Orenstein, Alex. J	Nov. 13
Carlson, Clarence O	Nov. 21
Davis, Frank F	Nov. 21
Conrad, Moise	Nov. 21
Fechtig, Edward M	Nov. 21
McMahon, John C	Nov. 21
Malia, John T	Nov. 21
Scheets, Lambert G	Nov. 21
Williams, Edward J	Nov. 21
DeGrummond, Raymond	Nov. 25
Christiasen, John	Nov. 26
Conover, H. H	Nov. 26
Cooper, J. B	Nov. 26
Lumby, Robert C	Nov. 26
McCoin, Orville E	Nov. 26
McGimsey, James V	Nov. 26
Lavery, Mathew	Nov. 27
Chamberlain, D. T	Dec. 2
Foster, Elmo M	Dec. 2
Garland, Henry V	Dec. 2
Gerow, William	Dec. 2
Laird, James	Dec. 2
Stephens, Fred H	Dec. 2
Stipp, Henry	Dec. 2
Weidman, Charles E	Dec. 2
Bronk, A. Earl	Dec. 9
French, Archie W	Dec. 9
Herrington, Walter W	Dec. 9
Keyser, Elgie M	Dec. 9
Kyte, Edward M	Dec. 9
Rall, Emil J	Dec. 9
Turner, Edward G	Dec. 14
Bliss, Gerald De Leo	Dec. 16
Browning, Walter S	Dec. 16
Woodsum, Walter C	Dec. 16
Dutrow, Howard V	Dec. 24
Holcomb, Benoni E	Dec. 28
Martin, James	Dec. 28
Hill, Urban L	Dec. 29
Keeling, James R	Dec. 29

P. R. R. Service Medal List—1909-1911.

Stilson, J. H	Jan. 1
Kern, F. R	Jan. 8
Pedersen, H. C	Jan. 14
Ward, James T	Jan. 23
Langstreth, James	Jan. 26
Ranson, M. T	Feb. 5
Glick, Herschel, S	Feb. 6
Partello, W. H	Feb. 7
Morrow, J. E	Feb. 12
Knapp, E. E	Feb. 24
VanReed, J. C	Mar. 1
Courtright, O. L	Mar. 11
Bell, R	Mar. 16
Farrell, T. V	Mar. 26
Woodling, J. A	Mar. 26
Bireley, H	April 22
Madison, T. C	April 23
Mock, T. P	April 29
Dion, H. C	May 7
Ranje, H. H	May 11
Freehan, P. A	May 14
Miller, B. C	May 19
Morgan, F. D	May 26
Harvie, T. A	June 1
Luker, R. B	June 1
Markham, William	June 1
Neal, T. E	June 1
Hatton, E	June 5
Foster, A. P	June 10
Mitchell, F. A	June 18
Joyce, J. W	June 26
Nickels, F. C	June 30
Vifquain, J. S	June 30
Moritz, O. L	July 1
Duff, M. L	July 5
Bruck, Frank	July 9
Orr, Earl	July 10
Thonet, A. E	July 13
Walton, H. E	July 19
Farr, Burt J	July 26
Prather, L	July 31

TRAMWAY CONSTRUCTION.

Work Begun by New Owners of Panama Franchise and Canal Zone License.

A history of the negotiations for a franchise for the construction and operation of a tramway system in the city of Panama, and along the Balboa, Tivoli, and Sabanas roads in the Canal Zone, up to January 11, 1911, is given in THE CANAL RECORD of that date. These negotiations led to the granting, by the municipality of Panama, of a 50-year franchise to Mr. Henry T. Cook on October 29, 1906. About the same time Mr. Cook made application of the Canal Commission for a license to operate in the Canal Zone. This was recommended, but subsequently the Panama Government was called upon to stop the work, which Mr. Cook had already begun on the Panama streets, on account of his having failed to give satisfactory guarantee for replacing the pavements which he proposed to tear up. The Panama authorities, at the request of the United States Government, compelled him to cease construction operations, and, as a result, he sought relief in the courts, obtaining a favorable decision. The franchise was then extended by the city on condition that work be resumed by December 9, 1910, and on December 16, 1910, the President of the United States granted Mr. Cook a revocable license for extending his lines into the Canal Zone. On July 18, 1910, the Public Utilities Corporation was organized for carrying on the work.

In May, 1911, Mr. Cook, having been unable to successfully finance the undertaking, gave an option on the city franchise and the Canal Zone license to Mr. Minor C. Keith, vice-president of the United Fruit Company. Mr. Keith, before exercising the option desired to obtain certain modifications, both in the Canal Zone license and in the franchise granted by the municipality of Panama. Under date of June 22, 1911, these changes were favorably acted upon by the municipality, and, in October, 1911, Mr. Keith acquired from Mr. Cook his interest in the franchise, license, and the Public Utilities Corporation. The latter organization was liquidated shortly after by Mr. Keith, who formed in its stead the Panama Tramways Company, organized under the laws of the State of New Jersey, with a capital stock of $750,000, and of which he became the head, Mr. C. G. Young of 60 Wall Street, New York, being consulting engineer. On January 23, 1912, a contract was entered into with the firm of R. W. Hebard & Co. for the construction of the entire project. By the terms of the municipal franchise, work was to be begun not later than February 7, 1912, and must be completed not later than 18 months from that date. Under the terms of the contract with the constructing firm, the work must be completed within 14 months from January 23. By the terms of the contract, the contractors, in addition to constructing the line, act as engineers for the tramways company.

The revocable license under which the new company will operate in the Canal Zone has not yet been signed, but the terms have been agreed upon, and the documents will probably be formally executed shortly. The tramways company desired two important modifications in the original license; one, to change the provision requiring the company to pay a franchise tax of one per cent on all gross receipts, both in the city of Panama and in the Canal Zone, to the Canal Zone Government. The company desired this provision be made applicable only to gross receipts in the Canal Zone. The request has been allowed. The second change desired was the elimination of the clause prohibiting the tramways company from doing an express package business over the Panama–Balboa line. This has been denied.

Work on the tramway construction was begun by the contractors on February 5, 1912, with a small force, which has since been augmented, until at the present time it numbers over 200 men. Crews are at work grading on the line running to the Hotel Tivoli; for the spur extending to the Catholic chapel in the Ancon Hospital grounds, and on the Balboa road, in the vicinity of East Balboa, where the roadbed is being excavated from the side of the hill. The spoil is transported on small dump cars, operating on Decauville track, to the points where it can be used as fill. This section will constitute the heaviest piece of construction the contractors will meet with in their grading operations.

The system will consist practically of three lines; one on Central avenue, one to Balboa, and one on North avenue to the Sabanas road, and along that road as far as the Zone police station. The Central avenue line will start at the corner of the east wing of the Hotel Tivoli, thence it will follow the road to the railroad station, crossing it on the way to the side on which the park is situated, in order to make a sharp turn where the road intersects with Central avenue. The line will continue along Central avenue to the seawall, stopping in front of the Government palace. There will be a loop around the small park at the railroad station, in order to allow the cars to draw close to the passenger exits. The Ancon spur, which is a part of this line, will skirt one side of the knoll on which the Hotel Tivoli stands, thence proceed in as nearly a direct line as possible to a point opposite the Catholic chapel on the Ancon Hospital road.

The Balboa line will start at Santa Ana park, extend down C street to 16th, thence along 16th street to B street, near the Santo Tomas Hospital; thence out B street until the Canal Zone boundary is reached. The track will be laid on the right-of-way of the Balboa road to the Zone boundary, and from that point, on private right-of-way. Beyond East Balboa, the location of the tramway cannot be determined until the Canal Commission has definitely fixed on the plans for the new projects at Balboa.

The Sabanas line will branch off from Central avenue at 13th street, continue on that street to North avenue; thence along the latter thoroughfare to Guachapali, where the streets turn to the left and parallels the railroad yard. The tramway will continue on North avenue to its intersection with the Caledonia road, near the railroad viaduct, thence out the Caledonia and Sabanas roads to the Zone police station.

In the construction of the tramway, "T" rail will be used on the macadam or dirt roads, and grooved rail on the streets that are paved with brick. In addition to other material, including a complete construction plant, about 200 tons of rail have already been received.

The system will include about twelve miles of track, as follows:

	Feet.
Santa Ana park to Sabanas police station....	20,000
Santa Ana park to Balboa..................	14,000
Hotel Tivoli to Government palace..........	8,000
Hotel Tivoli to Catholic chapel............	1,200
Double track from Canal Zone boundary to Balboa................................	10,000
Double track on lower Central Avenue......	1,200
Total..................................	54,900

In addition to the above, sidings will bring the total track mileage to between 11½ and 12 miles.

PERSONAL.

Lieut. Col. Charles F. Mason, accompanied by his family, sailed on the *Cristobal* on Tuesday, May 14, on his annual leave of absence.

Dr. Claude C. Pierce sailed on the *Parismina* on Thursday, May 9, for New Orleans, on annual leave.

Mr. Edward Schildhauer, acompanied by Mrs. Schildhauer, sailed on the *Colon*, on Wednesday, May 15, on his annual leave.

Major T. C. Dickson, accompanied by his family, sailed on the *Cristobal*, on Tuesday, May 14, on his annual leave of absence.

Observance of Fourth of July.

In a circular letter dated May 7, the Chairman and Chief Engineer has requested the heads of departments and divisions to appoint representatives to attend a meeting to be held at the Administration building in Ancon on Saturday, May 18, at 2.30 p. m., to consider the question of a celebration of Independence Day by the Americans on the Isthmus. The letter continues:

> Among the questions to be decided are:
>
> 1st—Shall such a celebration be held?
>
> 2d.—If so, where; and what shall be the general program of the celebration or celebrations?
>
> 3d.—Organization for making necessary arrangements, raising subscriptions, etc.
>
> Such celebrations are intended to be arranged by and for the benefit of Americans on the Isthmus, and it is intended that any celebration held shall be carried out in accordance with the wishes of the majority of the American employes of the Isthmian Canal Commission and the Panama Railroad Company. Please advise me as soon as practicable whom you designate to attend this meeting (who will be expected to act on this committee until further notice.) Your representatives should be instructed to canvass the sentiment among the employes in their respective departments or divisions prior to the meeting on May 18, so that they may be able to act with as full knowledge of the views as those whom they may represent at the meeting on May 18, as practicable. The Disbursing Officer of the Commission will be a member *ex-officio* and any head of department or division may likewise act on this committee *ex-officio* and be present at the meeting. The committee is authorized to appoint any additional members to act with it.

Commissioner H. H. Rousseau is appointed general chairman of the Fourth of July celebration committee.

The committee will be glad to receive any suggestions direct from any one in connection with any matters pertaining to the celebration in time to consider them at the meeting on May 18.

SOCIAL LIFE OF THE ZONE.

Annual Meeting of Cristobal Woman's Club—Other Club Notes.

The fifth annual meeting of the Cristobal Woman's Club was held in the Commission clubhouse on Wednesday, May 1. The reports of the officers showed that the club has maintained a good standard of work during the year, and closes for the summer with a membership of 53. The club season opened with a reception on September 27, 1911, and the meetings have been held weekly for eight months. There have been several general meetings with addresses on a variety of topics including household science, primary education, some modern aspects of criminology, nursing as an art, and modern views of philosophy. The home department studied domestic science and related topics, and devoted a series of programs to the study of home life in different countries. The department expended $40 for Christmas gifts among the poor children in Sunday schools of Colon and Cristobal. The education department has had charge of the juvenile library belonging to the Canal Zone Federation of Woman's Clubs and reported that 250 books are in use in the Union Sunday school of Cristobal. The art and literature department took up the study of various schools of art and furnished two instructive programs on folk songs and folk lore. The Dickens centenary was made the subject of one program.

An important feature of the club work has been the free health lectures for the poor of the city of Colon, which have been conducted by the subcommittee of the philanthropy department. There have been nine lectures, five in English, three in Spanish, and one in French. The subjects were oral hygiene, tuberculosis, its prevention and cure; and the danger of the house fly. The English lectures were the best attended, there being on some occasions audiences of from four to five hundred. The next largest attendance was at the Spanish lecture given on April 25, when there were 200 present. The lectures were illustrated with lantern slides, the first series of which were furnished by the Sanitary Department of the Isthmian Canal Commission. In December, the philanthropy department of the Cristobal club donated $100 to this committee for its work and from this sum additional slides were purchased. This work has the cooperation of the health department of the Commission, the municipality of the city of Colon, the ministers of the various churches, and the teachers and physicians both of Cristobal and Colon.

The Cristobal club entertained the Federation at its midseason meeting in January. Its donation to the Federation fund for the education of a native blind boy was $106.

The following officers were elected for the ensuing term: President, Mrs. J. L. Storla; first vice-president, Mrs. Carl H. Elliott; second vice-president, Mrs. Thomas E. Brown, Jr.; recording secretary, Mrs. V. Hart; corresponding secretary, Mrs. Charles Butters; treasurer, Mrs. A. Whitney. The members of the departments are: Art and literature, Mrs. Perkins, Mrs. Culbertson, Mrs. Divin; home, Mrs. Putnam, Mrs. Whitney, Mrs. Murray; philanthropy, Mrs. Morris, Mrs. Willson, Mrs. Rerdell; education, Mrs. George Butters, Mrs. Arminger.

At the meeting of the Gatun Woman's Club on Thursday May 9, it was decided that the organization should hold a three months' recess, beginning June 18, and reconvene on the first Thursday in September. During the recess period all communications regarding club matters may be addressed to Mrs. W. J. Allen, the secretary. The club has adopted the system of annual dues in place of monthly dues, and the rate has been fixed at $1, with an initiation fee of the same amount.

The Paraiso Woman's Club has entered upon a vacation which will last until September. Communications regarding club matters should be addressed to the secretary, Mrs. W. M. McIntyre.

Sunday School Association Meeting.

The quarterly meeting of the Isthmian Sunday School Association was held at Gorgona, in April, with an attendance of about 63. The reports showed that both the enrollment and the average attendance of the federated Sunday schools in the Zone are well maintained, and that the status of the work is equal to that of any year since the organization of the association in 1908. In point of numbers the schools stand in the following order: Cristobal. 240, with an extension at Porto Bello of 30 members; Empire, 130; Gorgona, 125; Gatun, 116; Las Cascadas, 110; Panama Methodist Episcopal, 90; Culebra, 85; Pedro Miguel, 54; Paraiso, 53; Corozal, 46; East Balboa, 32; Balboa, 25. The total cradle roll for the Isthmus is 127, and the total enrollment is 1,048, the number being divided into 193 adults and 855 children. The officers of the association are: President, Rev. A. A. Nellis; vice-president, Mr. J. F. Warner; secretary, Mr. E. H. Putnam; treasurer, Judge J. B. March.

Ministers Meeting.

The monthly meeeting of the Isthmian Ministers Association was held in St. Luke's Hospital chapel on Monday afternoon, May 6. Addresses were delivered by Dr. Darling and Dr. Reeder of Ancon Hospital staff.

The next mecting will be held on the first Monday in May at Empire.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending May 11:

Prinz Sigismund, May 5, from New York with 560 kegs of nails for stock.

Cristobal, May 5, from New York, with 124,400 barrels cement, for Atlantic and Pacific Divisions; 133 pieces steel bars, for Atlantic Division; 36 pieces steel beams, 13 cases brake shoe heads, 5 cases machinery, for Mechanical Division; 18,400 pieces hollow tile, 174 packages crane parts, for Panama Railroad Company; 26 cases castings, for Superintendent of Erection; 59 bundles paper, for stock.

Arcadian, May 5, from New York, witb 1 case of paper, for stock.

Francis H. Leggett, May 4, from Columbia River, with 35,786 pieces fir lumber, for stock.

Meteor, May 4, from Columbia River, with 24,069 pieces of fir lumber, for stock.

Zacapa, May 8, from New York, with 65 packages car parts, 92 cases water coolers, 7 cases rubber packing, 5 cases hardware, for stock; 48 pieces lumber for Mechanical Division.

Abangarez, May 9, from New Orleans, with 750 kegs white lead, 109 packages car parts, 315 sacks dairy feed, 694 cases fire brick, 66 pieces piling, 16 cases, plumbing supplies, 2,762 pieces lumber, for stock; 4 cases glass, for Panama Railroad Company; 17,603 pieces of lumber, 55 barrels brake shoes, for Mechanical Division.

Leelanaw, May 9, from San Francisco, with 986 bales alfalfa hay, for stock.

Colon, May 10, from New York, with 7 cases ice machinery, for Pacific Division; 19 barrels bearings, 175 pieces car couplers, 25 cases iocandescent lamps, for Mechanical Division; 30 packages crane parts, for Panama Railroad Company; 16 packages chains, 115 kegs rivets, 235 reels wire rope, 18 pieces steel plates, 194 kegs bolts aod rivets, 175 cases caustic soda, 25 bundles galvanized buckets, 10 cases caulks, 9 cases pots for stock; 12 cases caskets, 20 cases drugs and suodries, for Sanitary Department; and a miscelleous cargo, the whole coosisting of 1,425 packages, weighing 250 toos.

Sixaola, May 11, from New York, with 9,127 pieces hollow tile, for Panama Railroad Company; 80 drums calcium carbide, 9 pieces castings, 13 cases hardware, for stock.

Rainfall from May 1 to May 11, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section	Ins.		Ins.
Ancon	.11	11	.16
Balboa	.40	11	.45
*Miraflores	.67	8	1.33
Pedro Miguel	1.09	11	1.49
Rio Grande	2.48	8	2.55
Central Section—			
Culebra	3.19	8	3.48
*Camacho	2.00	8	2.19
Empire	1.65	8	2.04
Gamboa	1.62	9	1.71
*Juan Mina	1.05	10	2.32
Alhajuela	1.75	9	3.28
*El Vigia	1.40	9	3.12
*Gorgona	3.40	9	3.40
Frijoles	.74	10	1.55
*Monte Lirio	.96	10	1.03
Atlantic Section—			
Gatun	.11	8–9	.25
*Brazos Brook	.05	2–10	.14
Colon	.24	2	.24

*Standard rain gage—Readings at 5 p. m. daily. Automatic rain gage at unstarred stations—Values midnight to midnight.

Stages of the Chagres.

Maximum height of the Chagres River for the week ending midnight, Saturday, May 11, 1912. All heights are in feet above mean sea level.

DAY AND DATE.	STATION				
	Vigia	Alhajuela	Gamboa	Bohio.	Gatun Lake
Sun., May 5	124.7	91.2	43.6	17.0	16.8
Mon., May 6	124.7	91.1	43.6	16.9	16.8
Tues., May 7	124.6	91.0	43.6	17.0	16.9
Wed., May 8	125.7	91.2	43.7	17.0	16.9
Thurs., May 9	125.8	92.1	44.6	17.0	17.0
Fri., May 10	126.2	92.6	44.8	17.2	17.2
Sat., May 11	126.2	92.6	45.0	17.4	17.4
Height of low water to the nearest foot	125.0	91.0	44.0		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending May 22, 1912, (75th meridian time.)

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
May 16	......	2.57	9.08	3.13	9.35
May 17	......	3.40	9.52	3.53	10.17
May 18	......	4.22	10 35	4.36	11.00
May 19	......	5.07	11.20	5.20	11.47
			P.M.		
May 20	......	5.52	12.09	6.07	......
May 21	12.35	6.42	1.00	6.57	......
May 22	1.27	7.35	1.55	7.53	......

Misdirected Letters.

ANCON, C. Z., May 15, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Baldwin, Ernest N.
Barry, Mrs. C. J.
Casan, John B.
Chappel, Dr. Halbert W.
Cryus, Robert
de Vidol, Hundt, C.
Gaston, J.
Gorge, Guillermo
Groves, Louisa
Hicks, Mrs. T. B.
Howell, Mrs. Sarah
Humber, Capt. R. C.
Kimball, Miss Marion
Levy, Dr. William
Martindale, Dudley
McLean, A. L.
Nelson, David
Norton, J. R.
Porter, E. G.
Preston, Ollie
Roy, M. J.
Smith, J. G. (pkg.)
Todd, Miss Pearl (pkg.)
Toppan, Mrs. Elizabeth
Tronte, C. L.
Wadlow, Samuel J.
Wells, Albert
Wilkinson, W. W.
Wood, Miss Elsie
Zabala, L.

OFFICIAL CIRCULARS.

Electric Current for Individuals and Companies in the Canal Zone.

CULEBRA, C. Z., May 7, 1912.

CIRCULAR No. 336-D:

The furnishing of electric current by the Isthmian Canal Commission to individuals and companies in the Canal Zone is approved, as follows:

1. All applications for service of this character shall be made on regular forms and be approved by the Chairman and Chief Engineer before any work is done.
2. All secondary and interior wiring, including entrance switch, will be installed, in accordance with the rules and requirements of the National Board of Fire Underwriters of the United States, by the Isthmian Canal Commission and be paid for by the customer in accordance with existing rules and rates for labor and material furnished by the Isthmian Canal Commission to individuals and companies, after which this wiring and other material shall become the property of the customer.
3. The customer shall agree to permit the authorized employes of the Isthmian Canal Commission to inspect the interior and other secondary wiring at any convenient time and shall agree to pay the Commission for any alterations which may be necessary from time to time to keep the installation in safe condition in accordance with the rules and requirements of the National Board of Fire Underwriters of the United States.
4. The customer shall agree that no additions or alterations will be made by him in the secondary or interior wiring, and that all work shall be performed by the Isthmian Canal Commission under the same terms as the original installation.
5. The Isthmian Canal Commission will furnish at its own expense the necessary transformers. In general, any necessary extensions to the outside primary wiring circuits and pole lines to furnish the desired service will be paid for by the customer, who shall agree that the ownership of the same shall remain with the Commission. Due consideration will be given in each case to any variation deemed equitable from this policy.
6. Payment for current consumed shall be made by the customer in accordance with approved rates for individuals and companies on the basis of the number of 16-c.p., or equivalent, carbon filament lamps, where the number of lamps is fifteen or less. If any greater number of lamps is installed it will be arranged in advance by mutual agreement whether payment shall be made per lamp, or whether the current shall be measured and paid for in accordance with the approved rate per kilowatt hour for individuals and companies. The Commission will furnish all meters required at its own expense. The cost of current supplied will cover the exchange of new carbon filament lamps for the sockets of broken lamps and the cost of ordinary repairs to wiring, etc.
7. The minimum charge per month for any installation shall be $3 regardless of the number of lamps, or the amount of current consumed.

GEO. W. GOETHALS, *Chairman.*

Rates Charged for Use of Equipment Between Departments and Divisions of the Commission and Panama Railroad.

CULEBRA, C. Z., April 27, 1912.

CIRCULAR No. 169-M:

Effective May 1, 1912, the following rates will be charged for the use of equipment between departments and divisions of the Commission and the Panama railroad, and for individuals and companies:

BETWEEN DEPARTMENTS AND DIVISIONS OF COMMISSION AND PANAMA RAILROAD COMPANY.

For the use of the following equipment, without crew, covering fuel, supplies and repairs:

	Per Hour.
Pile drivers	$ .50
Locomotive cranes	.50
Floating pile drivers	.50
Tugs	5.00
Barges with towing machines	1.10
Barges without towing machines (400 tons or over)	.45
Barges without towing machines (under 400 tons)	.15
Wrecking barge, when used in crane or wrecking service	3.00

In addition a charge will be made for the actual time of the crew and auxiliary gangs, plus 10 per cent, as provided in Circular 169-E, except in the case of tugs, for which a rate with crew is provided.

WITH CREWS.	*Per Hour.*
Wrecking cranes	$ 7.00
Tugs	10.00
American locomotives	8.00
French locomotives	6.00
Switch locomotives, with hourly silver employes	2.50
Crane barge *La Valley*	10.00
Clapets	7.50
Steam launches, Navy type	2.00
Tug *DeLesseps* and launch *Sanidad*	7.50
Launches *Birdina, Petite Louise, Balboa* and *No. 26*	1.75
Gasoline launches and steam whaleboats	.60

Minimum charge will be for one hour.

USE OF DRY DOCK, SHIPWAYS AND GRIDIRON.

Cristobal Dry Dock.

Vessels under 200 feet, first day	$30.00
Subsequent days, per day	10.00

Balboa Shipways and Gridiron.

Vessels over 125 feet, per day	$5.00
Vessels under 125 feet, per day	3.00

No charge to be made for Sundays or holidays, or for days on which no work is performed.

FOR INDIVIDUALS AND COMPANIES.

Use of the following equipment, without crews, covering fuel, supplies, repairs and depreciation:

	Per Hour.
Pile driver	$1.00
Locomotive cranes	1.00
Floating pile drivers	1.00
Barges with towing machines	2.25
Barges without towing machines (400 tons or over)	90
Barges without towing machines (under 400 tons)	.30
Wrecking barge, when used in crane or wrecking service	6.00

In addition a charge will be made for the actual time of the crew and auxiliary gangs, plus 20 per cent, as provided in Circular 169-E.

WITH CREWS.	*Per Hour.*
Wrecking cranes	$10.50
Tugs	15 00
Locomotives	12.00
Crane barge *La Valley*	15.00
Clapets	12 50
Steam launches, Navy type	3 00
Tug *DeLesseps*, launch *Sanidad*	12.50
Launches *Birdina, Petite Louise*, and *No. 26*	2.75
Gasoline launches and steam whaleboats	.90

Minimum charge will be for one hour.

USE OF DRY DOCK, SHIPWAYS AND GRIDIRON.

Cristobal Dry Dock.

Vessels docked alone, first day	$60.00
Subsequent days, per day	20.00
Vessels docked with another vessel, first day	40.00
Subsequent days, per day	14.00

Balboa Shipways and Gridiron.

Vessels over 125 feet, per day	$25 00
Vessels under 125 feet, per day	15.00

Minimum charge shall be for one day.

No charge will be made for Sundays, or holidays, or for days on which no work is performed.

No change will be made in charge of $1 per person for transportation of passengers from the quarantine station to Balboa.

Circulars 169-F, 169-G, and 169-I are hereby cancelled.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Locomotive Inspectors.

CULEBRA, C. Z., May 13, 1912.

CIRCULAR No. 259-C:

The proper handling of injectors on locomotives is an important factor in the life of boilers and machinery, and also in fuel economy. Locomotive engineers, having in general better knowledge as to the amount of steam that will be needed, are in a position to best regulate the water supply. Hereafter, therefore, locomotive engineers will be required to work injectors at all times when the right-hand injector is in good condition; and they will also be held responsible for seeing that both injectors are always in good working order.

The foregoing rule is adopted as being in accord with the practice in vogue in the United States, and as being unanimously recommended by the transportation committee of the Isthmian Canal Commission and Panama Railroad Company.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Blanket Orders for Repair Work.

CULEBRA, C. Z., May 6, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

Your attention is invited to paragraph 9 of Circular 343, dated August 25, 1910, requiring that request be made on the Chief Engineer not later than June 15 of each year for annual blanket orders for such repair work as may be required during the succeeding fiscal year.

GEO. W. GOETHALS, *Chairman.*

Hotel Washington.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., May 8, 1912.

CIRCULAR No. 82:

ALL CONCERNED:

The new hotel being constructed on Colon Beach will be known as the "Hotel Washington."

J. A. SMITH, *General Superintendent.*

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Gatun, C. C., Sunday, May 19, 1912, at 5 p. m. The program follows:

1. March—*Joe Weber*...Appelles
2. Selection—*The Paradise of Mahomet*...Planquette & Ganne
3. Idyl—*Softly, Unawares*...Tobani
4. Overture—*William Tell*...Rossini
5. (a) Two Step—*Everybody's Doing It Now*. Berlin
   (b) March—*Take a Tip from Father*...Berlin & Snyder
6. Mazurka—*La Czarine*...Ganne
7. Descriptive—*The Rocket at Gilligan's*...De Witt
8. Selection—*The Golden Girl* (by request)...Howard
9. March—*Officer of the Day*...Hall

The next concert will be given at Empire, May 26, at 6 p. m.

CHARLES E. JENNINGS, *Musical Director.*

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to March 31, 1912, follows:

PERIODS.	Department of Civil Administration	Department of Law	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total
To June 30, 1909	3,427,090.29	....	9,673,539.28	69,622,561.42	78,022,606.10	....	160,745,797.09
Fiscal year, 1910	709,351.37	....	1,803,040.95	26,300,167.05	2,863,088.83	....	31,675,648.20
Fiscal year, 1911	755,079.44	....	1,717,792.62	27,477,776.19	3,097,959.72	....	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,089,361.82	312,920.11	....	2,615,340.33
August, 1911	74,768.45	1,878.27	156,954.79	2,287,506.30	355,087.42	86,243.14	2,962,438.37
September, 1911	64,905.24	1,805.83	146,912.23	2,212,702.66	234,233.58	86,275.56	2,746,835.10
October, 1911	64,143.49	1,586.71	152,252.71	2,751,377.24	323,154.80	32,061.45	3,324,576.40
November, 1911	66,491.92	2,502.39	138,404.22	2,346,719.44	200,614.00	93,952.56	2,848,684.53
December, 1911	66,013.49	1,854.62	143,745.59	2,467,291.16	316,891.32	60,794.07	3,056,590.25
January, 1912	74,737.19	2,581.53	114,637 59	2,228,910.21	451,899.54	118,983.75	3,021,749.81
February, 1912	71,769.71	2,330.07	115,308.91	2,326,058.48	249,658.11	73,488.96	2,838,614.24
March, 1912	67,304.46	2,002.52	123,461.41	2,489,702.10	290,937.83	87,356.62	3,060,764.94
Total	5,514,550.27	19,069.29	14,423,686.13	144,600,134.07	86,719,051.36	669,156.11	251,945,647.23

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule for the moving picture shows for the week of May 20 to 25 is, as follows: Monday, Corozal; Tuesday, Culebra; Wednesday, Empire; Thursday, Cristobal; Friday, Gatun; and Saturday, Gorgona.

The standing of the teams in the pool league is the same as last week, with Gatun leading, Corozal second and Empire third.

Culebra leads the billiard league, with Empire and Gatun close contenders.

Cristobal has a lead of five games in the duckpin tournament; Empire is second and Culebra third.

The final standing of the teams in the indoor baseball league is as follows:

Team.	Won	Lost	P. C.
Gorgona	10	0	1.000
Culebra	8	2	.800
Empire	4	6	.400
Corozal	3	7	.300
Gatun	3	7	.300
Cristobal	1	9	.100

A moving picture reel showing various forms of activity along the Canal was exhibited at the clubhouses during the past week through the courtesy of Mr. Kemp of San Francisco. Since April 15, the reels have been secured direct from the United States. These films are passed by the National Board of Censorship, as well as a committee of clubhouse secretaries in the Zone. Among the unusual films shown this week is a reel entitled "Raising ostriches in Egypt;" "Herring fishing off Boulogne," and "Modes and customs of the Hindoos". A striking film will be exhibited during the week of May 20 to 25, in which "The immortal Alamo" is acted by a strong cast of professional actors.

Upon request, Miss Gay Zenola MacLaren has arranged for a return engagement for a series of plays, and will arrive on the Isthmus May 27. Among the plays added to Miss MacLaren's repertoire since her visit in July, 1910, are: "Maggie Pepper". "Bought and paid for", "The fortune hunter" and "Rebecca of Sunnybrook farm". Dates of engagements at the various clubhouses will be announced later.

COROZAL.

The first prize in the handicap billiard tournament was won by R. A. Russell. He won 12 out of 13 games played. McKee and White tied for second place.

The library shelves and office desk have been moved to the opposite side of the front lobby. The main door leading from the lobby has been enlarged to double size.

Saturday night, May 4, the Corozal pool team won four games from the Cristobal team. The billiard games resulted in one victory for each team.

Last week the clubhouse membership passed the **250 mark.**

CULEBRA.

The volleyball games have again been started, and will be held every Tuesday from 5.10 to 6 p. m.

The Culebra bowling team took two of the three games on Saturday evening, from Gatun. Scores:

Culebra				Gatun.			
Bartlett	80	80	78	Green	105	105	83
Grier	80	95	98	Carr	87	86	78
Silver	81	90	79	Mohan	66		79
Hill	89	83	105	Barte	83	101	91
Palmer	98	80	90	Arthur		104	75
				Walters	78	78	
Totals	428	428	450		419	474	406

One of the new handball courts is ready for use; the others are nearly completed.

The clubhouse has procured a supply of individual paper combs, which are on sale at the cigar counter at one cent each.

A stereopticon lecture will be held at the clubhouse on Thursday evening, May 16, on "Flies, and their relation to disease", by Dr. Orenstein. Admission free.

A discussion club has been organized, and will meet every Friday evening from 7.30 to 8 o'clock. The regular discussion will be followed by consideration of some subject on hygiene that may be of practical value to the members. The meetings are open to men of Culebra.

The Camp Elliott team will bowl at Culebra, and the Culebra team at Camp Elliott, on Saturday evening.

The Culebra billiard team, winner of every game in the tournament, will play at Empire on Saturday evening.

EMPIRE.

The pool and billiard tournament games that were to have been played between Gorgona and Empire have been postponed and will be played at a later date.

The Corozal indoor baseball team failed to send a team to Empire Saturday night, May 11, and Empire won the last game of the present tournament by a forfeit.

The Gorgona bowling team will bowl at Empire Saturday, May 18.

The Rambler Dance Club will hold a dance in the clubhouse hall on Saturday, May 18.

On the Empire alleys Saturday night, May 11, the Cristobal duckpin team took three straight games from the Empire team; Scores:

Empire.				Cristobal.			
H. Giavelli	85	85	90	Herrington	90	94	76
Grund	85	84	93	Gibson	90	86	97
Goolsby	81	80	93	Collins	89	83	93
Dakin	79			Bullard	79	83	81
L. Giavelli	98	94	78	Herring	96	95	111
Sawtelle		84	75				
Totals	428	427	429		444	441	458

GORGONA.

Gorgona took two out of the three games rolled on Saturday night, May 11, between Gorgona and Camp Elliott.

F. L. Bernsee will play all comers a simultaneous checker match, Saturday night, May 18. All who play checkers are invited to participate in the games.

Culebra forfeited the last game to Gorgona, Saturday night, May 11, by the team failing to play the regular scheduled game. This gave Gorgona a perfect score of 1.000 per cent and is the second season that Gorgona has won the indoor baseball championship. A "smoker" is being planned by the entertainment committee in the team's honor.

In place of the regular scheduled game of indoor baseball Saturday night, May 11, the "Regulars" played the "First Team" with a victory for the "Regulars". Score 26 to 15. Batteries: "Regulars", Hilty and Simms; "First Team," Christensen and Ridge.

GATUN.

"Open house" was observed at the Gatun clubhouse on Saturday evening, May 11. A large number of the men of Gatun attended. Refreshments were served during the evening. The results of the various games were:

Gatun.		Corozal.	
Pool.			
DePoorter	100	Wilson	25
Dalton	100	McKee	50
Galloway	100	Roberts	85
Hughes	100	Baker	44
Billiards.			
Townsley	100	White	92
Wurster	100	Thompson	34

Bowling.

Culebra	461	443	419
Gatun	438	468	452

In the checker match 14 Gatun men played F. L. Bernsee, simultaneously. The results were: Out of 45 games played, Mr. Bernsee won 38, lost 4, draws 3. The Gatun players who won games were: Dr. Dunn, 1; R. E. Chatfield, 1; and F. D. Gartrell (Gatun's star player); 2. The who secured draws were: R. E. Chatfield, 1; F. D. Gartrell, 2; The checker players of Gatun will organize a club in the near future and will challenge all other checker clubs on the Isthmus.

Sanitary combs are now on sale at the Gatun clubhouse at one cent each.

On Saturday, May 18, Gatun will play pool and billiards at Corozal and will bowl Cristobal at home and abroad. Moving pictures will be shown on this night also. Mrs. Blanche Caldwell, lyric soprano of Empire, will sing two songs.

Another order for new books will shortly be sent to the United States. Suggestions gladly received.

CRISTOBAL.

On Saturday evening, May 18, Dr. Orenstein will deliver an illustrated lecture on "Flies and their relation to disease", under the auspices of the debating club. All men are invited to attend. The next debate will will be held on Wednesday evening, May 22. Subject: "Resolved, That the United States Government acted arbitrarily in acquiring the Panama Canal."

The indoor baseball team received notice that the game which was to have been played at Corozal has been forfeited to the local team by the Corozal team.

On Saturday night, May 11, the local bowlers took one out of three games from the Empire team by the following scores:

Cristobal.				Empire.			
Barrett	95	85	88	Pinney	90	113	109
Cotton, C.	77	80	85	Gustavson	97	83	96
Orr, E.	79	94	100	Nelson	90	84	93
Weston	95	112	92	Danielson	89	94	78
Louch	86	102	95	Rodeghiero	81	91	105
Totals	422	473	460		447	465	481

Married.

McCARTHY–MacINTYRE—At the Union Church Chapel, Cristobal, on May 11, Edith MacIntyre of Newark, N. J., to Joseph Sheldon McCarthy of New York City, the Rev. Carl H. Elliott officiating. Isthmian residence, Colon.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steamship Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line.

NEW YORK TO CRISTOBAL.

Advance	P. R. R.	Thursday	May	9
Panama	P. R. R.	Wednesday	May	15
Allianca	P R R.	Tuesdy	May	21
Colon	P. R. R.	Monday	May	27
Advance	P. R. R.	Monday	June	3
Panama	P. R. R.	Saturday	June	8
Allianca	P. R P.	Friday	June	14
Colon	P. R. R.	Friday	June	21
Advance	P. R. R.	Thursday	June	27
Panama	P. R. R.	Wednesday	July	3
Allianca	P. R. R.	Tuesday	July	9
Colon	P. R. R.	Monday	July	15
Advance	P. R. R.	Monday	July	22
Panama	P. R. R.	Saturday	July	27

CRISTOBAL TO NEW YORK.

Colon	P. R. R.	Wednesday	May	15
Advance	P. R. R.	Tuesday	May	21
Panama	P. R. R.	Monday	May	27
Allianca	P. R. R.	Sunday	June	2
Colon	P. R. R.	Sunday	June	9
Advance	P. R. R.	Saturday	June	15
Panama	P. R. R.	Friday	June	21
Allianca	P. R. R.	Thursday	June	27
Colon	P. R. R.	Wednesday	July	3
Advance	P. R. R.	Tuesday	July	9
Panama	P. R. R.	Monday	July	15
Allianca	P. R. R.	Sunday	July	21
Colon	P. R. R.	Sunday	July	28

NEW YORK TO COLON.

Almirante	U. F. C.	Wednesday	May	8
Tagus	R. M.	Saturday	May	11
Prinz Eitel Friedrich	H.-A.	Saturday	May	11
Carillo	U. F. C.	Saturday	May	11
Santa Marta	U. F. C.	Wednesday	May	15
Prinz August Wilhelm	H.-A.	Saturday	May	18
Turrialba	U. F. C.	Saturday	May	18
Metapan	U. F. C.	Wednesday	May	22
Oruba	R. M.	Saturday	May	25
Prinz Sigismund	H.-A.	Saturday	May	25
Tivives	U. F. C.	Saturday	May	25
Zacapa	U. F. C.	Wednesday	May	29
Sixaolo	U. F. C.	Saturday	June	1
Prinz Joachim	H.-A.	Saturday	June	1
Almirante	U. F. C.	Wednesday	June	5
Thames	R. M	Saturday	June	8
Carrillo	U. F. C.	Saturday	June	8
Prinz Eitel Friedrich	H.-A.	Saturday	June	8
Prinz August Wilhelm	H.-A.	Saturday	June	15
Turrialba	U.F.C.	Saturday	June	15

COLON TO NEW YORK.

Zacapa	U. F. C.	Thursday	May	16
Prinz Joachim	H.-A.	Tuesday	May	21
Sixaola	U. F. C.	Tuesday	May	21
Almirante	U. F. C.	Thursday	May	23
Prinz Eitel Friedrich	H.-A.	Monday	May	27
Thames	R. M	Tuesday	May	28
Santa Marta	U. F. C.	Thursday	May	30
Turrialba	U. F. C.	Tuesday	June	4
Prinz August Wilhelm	H.-A.	Tuesday	June	4
Metapan	U. F. C.	Thursday	June	6
Prinz Sigismund	H.-A.	Monday	June	10
Trent	R. M	Tuesday	June	11
Tivives	U.F.C.	Tuesday	June	11

NEW ORLEANS TO COLON.

Atenas	U. F. C.	Saturday	May	11
Orleanian	U. F. C.	Wednesday	May	15
Parismina	U. F. C.	Saturday	May	18
Cartago	U. F. C.	Wednesday	May	22
Abangarez	U. F. C.	Saturday	May	25
Heredia	U.F.C.	Wednesday	May	29
Atenas	U.F.C.	Saturday	June	1

COLON TO NEW ORLEANS.

Abangarez	U. F. C.	Thursday	May	16
Heredia	U.F.C.	Thursday	May	16
Atenas	U. F. C.	Thursday	May	23
Orleanian	U. F. C.	Thursday	May	23
Parismina	U.F.C.	Thursday	May	30
Cartago	U.F.C.	Thursday	May	30

P. R. R. steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

LOST—A No. 12 size Elgin watch, with the initials "J. L. W." on the back, on train No. 3, between Colon and Pedro Miguel. Finder will please return to J. L. Wickersham, Pedro Miguel.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, MAY 22, 1912. No. 39.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Monthly Report.

The report of the Chairman of the Isthmian Canal Commission for the month of April is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Relocation of Canal Zone Penitentiary.

The committee having in charge the selection of a permanent site for a Canal Zone penitentiary, consisting of Col. J. P. Fyffe, Frank Cotton, J. A. LePrince, M. E. Gilmore, and Lieut. Walter D. Smith, has submitted its recommendations, and the same were approved by the Chairman and Chief Engineer on May 11. The site selected by the committee is on a tract of land, situated at the east end of the footbridge over the Pedro Miguel River, opposite the town of Pedro Miguel, and, in the opinion of the committee, presents more advantages for such a purpose than any other location it was able to discover. The present requirements call for a penitentiary building capable of housing 160 persons. Because of the uncertainty as to the size of the population of the Canal Zone after the completion of the Canal, the committee made no recommendation as to ultimate requirements, but left the matter open. Present needs, it is believed, however, will be met by the removal and reerection, at the new site, of the concrete building, formerly in use at Culebra, together with the old wooden buildings adjacent thereto, formerly used as quarters for guards, etc.

The new building will be erected as a central unit, so that if found necessary at any future time, it can be readily enlarged. The greater part of the iron work in the old building, and other material that may be available, will be utilized. The plans for improving the new site contemplate the building of a suitable roadway from the village to the grounds at an estimated cost of $3,000; the laying of sewers and water mains at an estimated cost of $2,800. The cost of removing the old buildings is estimated at $8,900. The cost of taking down the present buildings will be borne by the Department of Construction and Engineering, but the remainder of the work is to be paid for out of the funds of the Department of Civil Administration.

Most of the prisoners that were formerly confined in the penitentiary at Culebra are now housed at the stockade on the Mandingo River on the new road toward Chorrera, from Empire. The others are confined in the jail recently erected at West Culebra.

Contractor's Task at Point 4-B, Opposite Juan Grande.

The Central Division has undertaken the completion of the Canal channel excavation, opposite Juan Grande, which was let to a contractor in December, 1910. The award was for the removal of 112,450 cubic yards of earth, lying on the east bank of the Chagres River, opposite Gorgona, in Mile 29, between stations 28-1,000 and 28-2,300, at the rate of 21½ cents per cubic yard. The successful bidder assigned the work to a subcontractor, by whom it was renounced on March 6, 1912. The bondsmen for the contractor were called on to state whether they would take up the contract and finish the work. They declined, and on May 16, the Central Division began the excavation with a steamshovel. There remain to be excavated about 15,000 cubic yards.

New Dynamite Dock in Use.

The new dynamite dock, situated on the bank of the French canal, near its intersection with the American Canal at Mindi, has been completed, and was placed in service for the first time on Friday of last week, when the steamer *Flora* arrived at Cristobal, with a cargo of 15,000 cases of dynamite, 10,000 cases of which consisted of 45 per cent, and 5,000 cases, of 60 per cent dynamite. In addition, the vessel had in its hold 19,000 bags of cement for reserve stock. The dock is 33 feet wide and 120 feet long, and was built at this point on account of its isolation, thereby insuring a greater measure of safety in the discharging of explosives. Formerly, dynamite and other explosives were unloaded at Dock 14. The new dock will be used also for the unloading of material intended for use on the fortifications.

Alterations at Ancon Hospital Laundry.

The boiler for the laundry of Ancon Hospital, having worn to the point at which repairing would be uneconomical, is to be supplanted by a Manning type boiler of 114 horsepower, which had been used at the Panama railroad shops at Cristobal from 1907 to 1910, and is believed to be capable of five or six years more service. The old boiler is a Nagel locomotive boiler made in Pennsylvania. It was used about two years by the Americans at the planing mill at Ancon, from which it was removed and installed in the laundry in July, 1909.

The removal of a portion of the wall on the north side of the main room of the first floor of the building has made a part of the porch, in effect, a part of the room, increasing its floor space by about four hundred square feet, and allowing readier communication with the spaces devoted to sorting and wrapping.

Tug Reliance and Tows.

The tug *Reliance*, which is towing three barges from Colon to Balboa, arrived at Punta Arenas, midway in the Strait of Magellan, on May 9. This port is 6,729 miles from Colon, and 3,750 miles from Balboa. The *Reliance* sailed from Colon on February 11, and is due at Balboa about June 20.

Auxiliary Mixing Plant in Lower Miraflores Lock.

One of the 2-cubic yard Chicago cube mixers, to be used in the auxiliary concrete mixing plant in the east side wall of the lower lock at Miraflores, has been installed, and is in use; the other has been transferred from berm crane E. These mixers discharge into 2-cubic yard buckets carried on narrow-gage trains to the chamber cranes, which place the concrete in the center wall. One of the chamber cranes was used in installing the mixers, by lifting them to a platform level with the recess left for it when the adjacent portions of the wall were built. The first mixer was taken from the plant in the west forebay at Pedro Miguel Lock. When it was loaded on a car for transfer, it was handled by a locomotive crane, operating from the 40-foot storage trestle over the bins which supplied the mixers.

New Automobile Fire Engines.

One of the two automobile fire engines purchased from the Webb Motor Fire Apparatus Company of St. Louis for the Ancon and Cristobal fire stations was received on April 18, the other on April 25. Both machines are at the Cristobal station, where they have been subjected to the prescribed tests under the direction of the mechanical engineer at Gorgona, and the chief of the Canal Zone fire department. On a test run from Gatun, at 9.30 o'clock at night, one of the engines covered the distance of seven and nine-tenths miles from the fire station at Gatun to the fire station at Cristobal in 25 minutes. There are many sharp turns and several heavy grades in this road.

A description of the engines was published in THE CANAL RECORD of October 25, 1911. They are of the six-cylinder type, 80 horsepower, A. L. A. M. rating, and, under the specifications, must be able to run 20 miles an hour up a 12 per cent grade, or 50 miles an hour on level roads. The pumps, on test, have shown a capacity of from 600 to 690 gallons of water per minute, through two

NOTES OF PROGRESS.

(Continued.)

300-foot lines of hose, with one and one-fourth inch nozzle attached, from suction, with 8-foot lift from the sea. Each engine will carry 1,200 feet of hose when fully equipped, and is supplied with one 12-foot roof ladder, one 20-foot extension ladder, and two 3-gallon fire extinguishers.

The Ancon engine will be kept at Cristobal until the water situation there is relieved. In case of a serious fire and the necessity of resorting to the use of sea water, the water could be carried a considerable distance by using both automobile engines and the steam fire engine on a relay line.

Several members of the company at the Cristobal station are taking a course of instruction in the operation and care of the engines, and four have already passed the examination under the Board of Local Inspectors. The position of motor engineer in the Canal Zone fire department has been created, and the engineer who was sent down by the manufacturers to place the machines on service, has been appointed to fill it.

Requisition was made some time ago for the purchase of an automobile tractor and a supplementary pair of wheels with transmission axle, to be substituted for horses in drawing the No. 3 Silsby fire engine at the Cristobal station. The bids received, however, failed to provide an economical machine that met all the requirements, and they were rejected. Further consideration of purchase will depend on whether, or not, suitable apparatus can be found.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 88 per cent completed, 198,089 cubic yards, out of a total of 225,000, having been placed at the close of work on May 18. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
May 13	64	3.30	1
May 14	68	4.00	1
May 15	28	1.30	1
May 16	40	2.00	1
May 17	48	3.00	1
May 18	76	4.15	1
Total	324	18.15	1
Previously reported	197,765		
Grand total	198,089		

Trestle to South Approach Wall at Pedro Miguel.

A trestle has been constructed across the lower approach to the west chamber of Pedro Miguel Lock, on a level with the wing wall, to carry material for filling the south approach wall. It is about 134 feet long, crossing at an angle of 64 degrees with the axis of the lock, and rises 54 feet above the surface of the floor, which is at elevation 13 feet above sealevel. Each of the eight supporting bents is built with four upright and two battering posts, for which piles were used. The bents are at right angles with the track, except two, which were placed parallel to the center wall, in order to clear a track on the floor of the lock.

Notice.

Owners of launches of all classes, as well as motor boats and gasoline boats, and all boats propelled in whole, or in part, by machinery, operated in Canal Zone waters, are hereby notified that such boats are subject to the inspection laws of the Canal Zone. Owners or operators should apply to the Board of Local Inspectors, Ancon, for the inspection of their boat, stating where the boat is located and when it can be inspected, in order that the Board may arrange for its inspection. After inspection, a certificate will be issued by the Board of Local Inspectors authorizing the use and operation of such boat in Canal Zone waters, subject to the conditions set forth in the certificate of inspection. The operation of all such boats in Canal Zone waters without first securing a certificate from the Board of Local Inspectors is a violation of law.

CONCRETE WORK IN THE LOCKS.

About 84 per cent of the concrete for the locks is in place, the amount at the close of work on May 18 being 3,662,246 cubic yards, out of a total of approximately 4,303,486. A total of 24,133½ cubic yards of concrete was laid in the locks during the week ending May 18.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on May 18 being 1,871,823 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending May 18, and of the total follows; and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
May 13	268	4.10	2	......	......	......	......	319½
May 14	138	2.22	2	......	......	......	......	186½
May 15	358	5.56	2	......	......	......	......	378
May 16	350	5.52	2	......	......	......	......	385
May 17	168	2.58	2	......	......	......	......	223½
May 18	74	1.18	2	......	......	......	......	133
*Portable mixers	......	......	......	269½	......	......	......	......
Total	1,356	22.36	2	269½	......	......	......	1,625½
Previously reported	......	......	......	......	......	......	......	1,870,194½
Grand total	......	......	......	......	......	......	......	1,871,820

The 269½ yards shown for the portable mixers are reinforced concrete, and were placed on the following days: May 13th, 51½; May 14th, 48½; May 15th, 20; May 16th, 35; May 17th, 55½; May 19th, 59.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 94 per cent completed, 843,582 cubic yards, out of a total of 890,750, bucket measurement, having been placed at the close of work on May 18. The record for each of the working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
May 12	......	......	......	52	5.00	1	......	52
May 13	118	3.50	1	177	19.00	3	......	295
May 14	66	2.00	1	281	28.50	5	......	347
May 15	104	2.75	1	307	27.50	5	......	411
May 16	80	2.50	1	289	25.50	5	......	369
May 17	354	7.50	1	189	20.25	3	15	558
May 18	198	6.50	1	257	24.00	5	......	455
Total	920	24.75	1	1,552	149.75	4.5	15	2,487
Previously reported	......	......	......	......	......	......	4,423	841,095
Grand total	......	......	......	......	......	......	4,438	843,582

MIRAFLORES LOCKS.

Over 66 per cent of the concrete for the system of two twin locks at Miraflores was in place on May 18, the total amount on that date being 946,844 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
May 13	1,288	40.33	8	1,360	21.33	3	455	47.00	6	......	3,103
May 14	1,436	39.17	8	1,242	20.50	3	576	45.00	7	......	3,254
May 15	1,598	44.00	8	1,372	21.67	3	488	41.50	7	......	3,458
May 16	1,064	35.67	8	1,536	23.08	3	249	19.00	6	......	2,849
May 17	1,818	49.67	8	1,190	18.67	3	409	27.50	5	......	3,417
May 18	2,014	49.67	8	1,558	20.20	2	368	24.00	3	......	3,940
Total	9,218	258.51	8	8,258	125.45	2.83	2,545	204.00	5.67	......	20,021
Previously reported	......	......	......	......	......	......	......	......	......	3,693	926,823
Grand total	......	......	......	......	......	......	......	......	......	3,693	946,844

FOURTH OF JULY.

Celebration to be Held at Ancon and Balboa This Year.

At a meeting of the representatives of the different departments and divisions held at Ancon on Saturday afternoon, May 18, to arrange for the celebration of Independence Day by the Americans on the Isthmus, there was a good attendance and considerable interest was manifested. The sentiment was almost unanimously in favor of a celebration, and a resolution was carried to the effect that such a celebration should be held on the general lines of the celebrations of previous years. In regard to the place for holding the celebration, which was held last year at Cristobal, a considerable preference was shown for Ancon and Balboa, Ancon for the field, and other land events, and Balboa for the aquatic sports. Cristobal was second choice, and Empire third. After thoroughly canvassing the situation, a resolution was carried to the effect that the celebration this year should be held at Ancon.

It was stated that on account of the larger number of Americans on the Isthmus this year than last (due to the presence of the Tenth Infantry at Camp Otis, and the force of Americans engaged in the erection of the lock gates,) that the facilities of the Panama railroad would be inadequate to undertake safely unlimited free transportation, as has been the custom heretofore, and that it had been decided by the Chairman and Chief Engineer to be necessary, on this account, to limit free transportation to contributors and participants in the celebration.

The general chairman of the celebration, Mr. H. H. Rousseau, was directed to appoint the chairmen of the various subcommittees, who, in accordance with the usual custom, would make up the executive committee in general charge. The following have been announced by him: Chairman, entertainment and amusement committee, Capt. R. E. Wood; transportation, Mr. J. A. Smith; finance, Mr. E. J. Williams; fireworks, Capt. F. O. Whitlock; dance, Dr. J. C. Perry; publicity, Col. Tom M. Cooke. A meeting of the executive committee will be held at Ancon on Saturday afternoon, June 1, to receive reports, select the members of the subcommittees, and to decide upon the details of the celebration. Mr. Williams, chairman of the finance committee, will issue the subscription blanks for distribution to the various departments and divisions as soon as they are printed. It is desired to have as quickly as possible approximate estimates from the departments and divisions of the totals of their respective subscriptions, in order to be able to outline the scope and cost of the celebration. The total receipts last year amounted to $5,568.71; total disbursements $4,419.96; unexpended balance, $1,248.75.

It is proposed also to distribute fireworks among the villages of Cristobal and Gorgona, and to provide for a joint display at Culebra and Empire, for the benefit of the children. There will be also the customary displays at Taboga sanitarium, and at the Palo Seco leper asylum.

Obituary.

Mrs. Martin Roe, wife of Mr. Martin Roe of Ancon, died in Ancon Hospital on May 19. She was thirty-five years of age, and had been on the Isthmus six years. She is survived by her husband.

CANAL WORK IN APRIL.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., May 15, 1912.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of April, 1912:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	....	1,626,947	195,117	1,822,064
Work excavation, wet	Cubic yards	403,616	....	383,995	787,611
Total work excavation	Cubic yards	403,616	1,626,947	579,112	2,609,675
Plant excavation, dry	Cubic yards	....	27,528	....	27,528
Plant excavation, wet	Cubic yards	....	....	117,180	117,180
Total plant excavation	Cubic yards	....	27,528	117,180	144,708
Total Canal excavation	Cubic yards	403,616	1,654,475	696,292	2,754,383
Material placed in dams	Cubic yards	491,145	....	93,677	584,822
Concrete placed in locks and dams	Cubic yards	14,992	....	107,195	122,187
Explosives used	Tons (Gross)	97.49	190.63	35.19	323.31
Rock drilled	Feet	69,571	427,709	81,756	579,036
Tracks removed	Miles	....	12.22	....	12.22
New tracks laid	Miles	4.22	15.73	3.33	23.28
Rock crushed	Cubic yards	46,172	....	82,770	128,942
Cement used	Barrels	20,632	171	109,355	130,158
New roads built	Miles	0.35	....	....	0.35
Water mains laid	Feet	7,889	1,237	672	9,798
Sewers laid	Feet	2,809	929	....	3,736
Open drains and ditches dug	Feet	18,367	58,694	17,975	95,036
Average daily force	....	6,285	8,086	6,042	20,413
Average rainfall	Inches	1.58	1.81	3.52	2.35

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the division engineers, the inspection being cared for by this subdivision. Work was continued on the grinding of fixed irons and preparing valve chambers for the installation of the valves, which work is being done under supervision of this office. This subdivision is also charged with general inspection of masonry work of all the locks.

LOCK GATES AND PROTECTIVE DEVICES.

Up to April 20, a total of 50,275 tons of structural steel had been accepted at the rolling mills, of which 1,414 tons were required to replace material lost on the steamship *Moldegaard*, leaving 48,861 tons on original orders, or about 96 per cent of the total required for all lock gates. The amount accepted between March 20 and April 20 was 1,245 tons. A total of 31,776 tons of riveted structural steel had been shipped from the Rankin shops, or about 62 per cent of the total contract weight of this class. Of this last item, 2,853 tons were shipped between March 20 and April 20. In addition to these quantities, 1,432 tons of riveted steel had been shipped in complete replacement of all material of this class lost on the steamship *Moldegaard*.

The following are details of material shipped up to April 20, 1912:

Gatun Locks—Practically all material for the 20 gates in the upper chamber, about 25 per cent of the steel for the gates (77 feet 10 inches high) in the intermediate chamber, about three-fourths of the material for the 77-foot gates in the lower chamber, and one-third of that required for the lower guard gates, had been shipped.

Pedro Miguel Lock—Practically all material for this lock had been shipped.

Miraflores Locks—A small amount of material for the upper guard gates had been shipped.

LOCK GATE ERECTION.

Gatun—Upper guard gates, 54 feet 8 inches high, leaves Nos. 37 to 40, inclusive: The work done on these gates during the month consisted mainly in fitting and attaching the castings along the quoin and miter posts. Gate No. 38 was placed on its pintle and fixed to the anchorage on April 15, and gate No. 37 was moved to its final position over the pintle and made ready for lowering. Leaf No. 39 was practically ready for moving into position on April 30. On leaf No. 40, about two-thirds of the rivets in and about the quoin castings remained to be driven before moving the leaf. The reaction castings at the miter end of leaves Nos. 37 and 38 were attached and partly fitted, while the end plates on leaves Nos. 39 and 40 were ground ready for the attachment of the castings. The work remaining to be done on these gates consists in hanging the leaves, the attaching of castings at the miter end, the adjustment and babbitting of the bearing plates, a small amount of riveting and calking, the testing for watertightness, the painting and the fitting and attaching of the timber sills and fenders, and also the footwalk and railing.

Upper gates, upper lock, 77 feet high, leaves Nos. 33 to 36, inclusive: Very little work was done on these leaves during the month. It consisted in bolting, reaming and riveting the sheathing plates. The reaming was about completed, except close to the false work frames. The riveting was about one-third completed, as against one-fourth at the beginning of the month.

Middle gates, upper lock, 77 feet high, leaves Nos. 29 to 32, inclusive: Very little work was done on these leaves during the month. The sheathing plates were bolted up, except the two top panels, and two panels reamed on three of the leaves and five panels on the fourth leaf. No riveting of the sheathing had been done.

Safety gates, upper lock, 77 feet high, leaves 25 to 28, inclusive: The erection of these leaves began April 1. The skeletons have been erected, excepting the top girders, and riveted for a height of five panels out of eighteen. Three panels of upstream sheathing were put in place on all these leaves.

Middle gates, lower lock, 77 feet high, leaves Nos. 9 to 12, inclusive: The erection began on April 12. One panel was raised, and the interior framing riveted. Work was then stopped on account of lack of material.

Pedro Miguel—Upper guard gates, 54 feet 8 inches high, leaves Nos. 50 to 53, inclusive: A small amount of riveting was done and the grinding of the end plates continued, considerable grinding and riveting remaining to be done. No castings were attached.

Upper gates, 79 feet high, leaves Nos. 54 to 57, inclusive: The work on these leaves consisted of a small amount of interior riveting and the attaching of about two-thirds of the sheathing plates. These have been partly bolted, without cover or splice plates, but no riveting was done on them during the month.

Safety gates, 79 feet high, leaves Nos. 62 to 65, inclusive: The placing of the sheathing on both faces was completed, and the erection bridges were moved on April 29. The interior framing was riveted up, but little reaming and no riveting was done on the sheathing plates.

Lower guard gates, 79 feet high, leaves Nos. 62 to 65, inclusive: The placing of the sheathing on both faces was completed, and the erection bridges were moved on April 29. The interior framing was riveted up, but little reaming and no riveting was done on the sheathing plates.

Lower guard gates, 47 feet 4 inches high, leaves Nos. 70 to 73, inclusive: The bottom girders for two leaves were placed on April 9; further work was stopped owing to lack of material.

Miraflores—No material has been erected in these locks.

The total tonnage of lock gates erected on the Canal to May 1, 1912, without regard to its being fully reamed or riveted, was about 13,682 tons, out of a total of 58,000 tons, or about 24 per cent. Of this, 2,646 tons, or 4½ per cent, were erected during April. The total of field rivets driven was 668,575, or 11.6 per cent, of which 135,403, or 2.4 per cent, were driven during the month.

LOCK GATE RECESS COVERS.

The material for all recess covers (80 in all,) including the castings, has been shipped from the United States. At Gatun, nine covers were put in place during April, making 27 in all, to date, out of a total of 36. One cover was riveted during the month, making a total of 17 riveted to date. Two were aligned and grouted in April, making a total of 10 at the present time. At Pedro Miguel, 16 out of 20 have been erected and riveted, but none fully aligned, or grouted, to date. Four of these were erected, and five riveted, during April.

CHAIN FENDERS.

All shop drawings have been approved, except the piping plans, which are being revised to fit the operating pumps. The structural steel work has been practically all rolled, riveted up, and finished. Nearly all iron and steel castings for the sample fender have been cast and machined. About half of the hawsepipe castings for all fenders on the Canal have been satisfactorily cast, but none were machined at the end of the month. The chain for the sample fender was finished, and tested, accepted, and shipped to the Isthmus.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection, as follows:

(*1*) *For the rising stem and cylindrical valve machines purchased under Circular 614*—The two trial rising stem gate valve machines, Nos. 260 and 261, are now on the Isthmus, and the installation is practically completed, but on account of nonreceipt of required parts to make connections of valve stems to crossheads, nothing was done in the way of continuing this installation during the month. The first machine on the order for the remaining 114 rising stem gate valve machines was set up on the new testing rig at the plant of the manufacturers, and it is expected that the machine will be ready to ship some time during the ensuing month. The various groups, as stated in the contract, as parts not required to be tested, are being delivered.

The second, and last, trial cylindrical valve machine was received complete during the month. Nine of the remaining 118 cylindrical valve machines have been received to date, eight of which were received during the month.

None of the motors under this circular were received during the month. The tests of the trial motors, as stated in last month's report, are now completed.

(*2*) *For the rack railway and other material purchased under Circulars 619, 636, 636-D, 647, 666 and 688*—Inspection on the Isthmus shows some irregularities in the machining of the ends of rack sections. Inherent irregularities were found also in the conductor slot cover brackets. Otherwise the work progressed satisfactorily.

(*3*) *For the gate operating machines, Class 1, and miter forcing machines, Class 2, purchased under Circular 627*—No work has been done on the installation of these machines, the same being held up owing to the work on any of the miter gates not being completed. The second trial miter gate moving machine was received during the month. None of the 90 miter gate moving machines have been shipped.

Two motors for the miter gate moving machines were received during the month. One of these motors was installed and operated with machine, but machine was not connected to gate with stem.

(*4*) *For the gate and girder hoisting machinery for the emergency dams, purchased under Circular 616*—Satisfactory progress was made on this machinery during the month.

(*5*) *For the hydroelectric station, purchased under Circular 648*—The castings in the main for the turbines are completed, and work on penstocks, headgates, turbines, exciters, and reactances progressed satisfactorily.

(*6*) *For the electric towing locomotives, purchased under Circular 650*—Working drawings are being prepared for Class 1, Item 1, one trial locomotive, at the works of the manufacturer. Award has not yet been made for the remaining 39 locomotives.

(*7*) *For locomotive cranes, derricks, and hoisting engines for erection plant of machinery and electrical equipment, purchased under Circular 622*—Two more of the cranes were received during the month, and were sent to Gorgona shops for erection. This leaves two cranes under this order yet to be received. The four previously received are erected and now in service.

The following is a summary of the work accomplished in the field by the erecting forces:

Atlantic Division Locks—The force installing machinery and electrical equipment assembled 2,292 feet of towing track, including the assembly of rack sections, channels, anchor bolts and "T" rails, and bonding of same. (This does not include the installation of conductor rails, conductor covers, and brackets.) A total of 4,200 feet of towing track has been placed and partly finished to date.

The work of grinding and chipping irons in the valves has been carried on during the month in valves 256, 257, 262, and 263; also, on intake valves Nos. 264, 265, 267, 268, and 269.

The seals fixed in the masonry for the intake valves had to be removed and planed. Three of the intake valve chambers were ready to receive the valves at the end of the month. Cylindrical valve No. 558 was installed.

The motor and back gear shaft has been installed on miter gate moving machine No. 38

During the month, 390 cubic yards of concrete were placed. The amount previously reported was 496.6, making the total to date 886.6; 128.8 for locomotive track, and the remainder, 261.2, in rising stem gate valves, cylindrical valves, and miscellaneous places.

Pacific Division Locks—Most of the work in the Pacific Division locks has been of a preparatory nature, and at Pedro Miguel only. Installation of steel for miter gate recess covers continued, and the installation of towing locomotive track was commenced. One 15-ton locomotive crane, for handling machinery, track material and hoisting cement, was erected on the return track of the middle wall.

EMERGENCY DAMS.

The inspection work in the United States progressed satisfactorily during the month. Up to April 20, a total of 883 drawings, covering turning and wedging machinery, structural material, etc., were completed and approved. This completes all the drawings for Gatun and Pedro Miguel dams, and about 20 per cent of the drawings required for the Miraflores dams.

At the rolling mills and foundries, 795 tons of riveted nickel steel, 110 tons of riveted structural steel, 66 tons of turning and wedging machinery, including miscellaneous material, were fabricated during the month. At the shops, 611 tons of riveted nickel steel, 44 tons of riveted structural steel, and 46 tons of turning and wedging machinery, including miscellaneous material, were fabricated during the month. Satisfactory progress has been made on the roller bearings, all the roller bearings for five dams having been manufactured and accepted to date.

To summarize, practically all the material for the first four dams has been manufactured and accepted in the rolling mills and foundries, and twelve per cent of the total material required for all six emergency dams has been manufactured in the shops to date.

AIDS TO NAVIGATION.

Surveys—Practically all of the surveys required in connection with the work of this subdivision have been completed. The force on this work were engaged during the month in working up field notes and checking same for the location of buoys in the section from Mamei to Gamboa.

Construction—Range No. 9-11, Pacific Division—Seventy-five cubic yards of ballast rock were placed in the foundation of the front tower.

Range No. 1-2, Pacific Division—Same status as when last reported.

Range 13-14, Pacific Division—Temporary lights were installed in both towers.

Range No. 5-6, Atlantic Division—Rear tower—Brass lantern frame and curved glass were placed, and the electric light and flashing apparatus were installed. Front tower—The spiral concrete stairway was completed; all doors and windows were put in place; brass lantern frame and curved glass were set, and electric light and flashing apparatus were installed.

Range No. 21-22, Gatun Lake section—Same status as when reported last month.

Range No. 24-25, Gatun Lake section—Front tower—The newel post was carried up to its full height. Rear tower—Same status as when reported last month.

Range No. 1-2, Gatun Lake section—Front tower—Wooden forms for the platform supporting the tower were constructed, and at the end of the month, were 90 per cent completed.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month, two shovels were engaged in borrow pit excavation for the Locks backfill, and for construction tracks, 69,221 cubic yards of material being removed.

Backfill—Backfilling behind the side and center walls of the middle and center locks was continued. The quantity placed during the month aggregated 64,537 cubic yards, distributed, as follows: East wall, 24,140 cubic yards; west wall, 27,415 cubic yards; center wall, 12,982 cubic yards. The total placed to May 1 amounted to 1,394,706 cubic yards, which was 77.5 per cent of the entire backfill.

Receiving and Issuing Material—The consumption of sand exceeded the receipts by 6,031 cubic yards, and the receipts of rock and cement exceeded the consumption by 35,503 cubic yards, and 5,720 barrels, respectively.

Mixing and Placing Plants—Plant No. 1 and all portable mixers were kept in satisfactory operation during the month.

Iron and Steel Work—During the month, 209.8 tons of fixed steel, and 105,777 feet of reinforcing rods were placed. Two and one-half tons of reinforcing rails, and 23.1 tons of electric return track, were laid.

Concrete Work—There was a decrease of 15,932 cubic yards in the amount of concrete laid, as compared with the figures for the preceding month. The daily average for the 25 working days was 464 cubic yards, as compared with a daily average during March of 1,059 cubic yards. The total amount of concrete placed during the month was 11,600 cubic yards. The bucket measurement exceeded the place measurement by 346.5 cubic yards. Of the total, 1,849 cubic yards were placed in the upper lock, 1,630 cubic yards in the middle lock and 8,121 cubic yards in the lower lock. The concrete work for the entire lock system was 93.09 per cent completed at the end of April.

OPERATION OF THE PERMANENT CONCRETE CONSTRUCTION PLANTS.

Length of working day (hours)	9.00
Average number of hours per day worked, per strand of cableway laying concrete and large stone (actual working time)	1.23
Average number of mixers per day	3.36
Average hourly output per mixer (actual working time) cu. yds	.50
Average amount of concrete and large stone laid per hour, per strand of cableway (actual working time) cu. yds	32.04
Large stone laid, cubic yards	
Concrete laid, cableways, cubic yards	8,852 00
Concrete laid, crane and derrick, cu. yds	
Concrete laid, derricks, cubic yards	2,010.00
Concrete laid, portable mixers, cu. yds	1,084.50
Total amount of concrete laid, cu. yds	11,946.50

GATUN DAM.

Construction during the month increased the total fill, as determined by cross sections of the material in place, by 491,145 cubic yards, making the total amount in place 19,043,431 cubic yards. On May 1, the Dam was 88.68 per cent completed.

Hydraulic Fill—The dredges increased the hydraulic fill by 204,189 cubic yards. The total hydraulic fill in place April 30 was 9,599,657 cubic yards.

Dry Fill—The material received from the steamshovels, amounting to 286,956 cubic yards, was placed on the north and south toes of the Dam, east and west of the Spillway, making the total dry fill in place 9,443,774 cubic yards.

GATUN SPILLWAY.

Excavation—The Spillway excavation was not extended during the month, the total amount of material removed remaining at 1,589,108 cubic yards, as previously reported.

Backfill—Backfilling was not extended during the month, the total remaining at 16,236 cubic yards.

Concrete—The work of placing concrete was continued. The amount placed during the month aggregated 3,392 cubic yards, which increased the total to 197,870 cubic yards. The concrete work for the Spillway was 87.94 per cent completed.

HARBOR AND CHANNEL SECTION.

Dredging from Ocean to Mindi—Five dredges removed 199,447 cubic yards of earth, and 54,125 cubic yards of rock from the Canal prism. In addition, the dredge *Mindi* removed 6,291 cubic yards of rock at the Panama railroad Cristobal terminal docks. On April 30th, 40 feet of water could be carried from zero to zero plus 2,800 feet; 35 feet to Mile Post 3 plus 4,500 feet; 30 feet to Mile Post 4 plus 1,400 feet; 20 feet to Mile Post 5 plus 2,438.9 feet, the point of intersection with the French canal.

Approach to Gatun Locks—Two dredges removed 127,629 cubic yards of earth, and 22,415 cubic yards or rock from the Canal prism.

PORTO BELLO.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day, hours	8.00
Average number of hours worked per day	3.97
Average number of cubic yards per hour of working day	229.79
Average number of cubic yards per working hour	472.95
Maximum day's output (5 hrs. 15 min.) cu. yds	2,176.00
Average day's output (25 days) cu. yds	1,838.28
Average hourly output (168 hrs., 38 min.) cu. yds	272.60
Total output for the month, cu. yds	46,172.00

SAND, STONE, AND CEMENT SERVICE.

In connection with this service, plant steamed 3,410 miles, handled 504 barges, and carried 3,028 passengers.

WEST BREAKWATER, COLON.

During the month, 46,538 cubic yards of material were excavated and dumped from the trestle. The double track trestle was extended 334 linear feet. On May 1, the trestle extended 10,498 linear feet from shore. Eight thousand three hundred and eighty cubic yards of Porto Bello rock were placed on the breakwater, making a total of 50,236 cubic yards used for that purpose to May 1. The total amount of rock dredged and dumped on the west breakwater to April 1, 1912, was 970,695 cubic yards. During the month, 54,125 cubic yards of rock were dredged and dumped, increasing the total to 1,024,820 cubic yards. The amount of dry fill placed to May 1 was 756,829 cubic yards.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended, as required, to facilitate construction work.

Work was continued on the Colon street improvements.

Central Division.

During the month of April, the total amount of material excavated in the Central Division was 1,654,475 cubic yards, of which 362,615 cubic yards were excavated as earth, and 1,291,860 cubic yards as rock. Of this quantity, 1,624,947 cubic yards were removed by steamshovels and 19,776 cubic yards by cranes. Contractors removed 6,496 cubic yards by hand and 3,256 cubic yards by steamshovel. Of the total, 1,600,779 cubic yards consisted of primary excavation for the Canal prism, 26,169 cubic yards for diversion, and 27,528 cubic yards were gravel removed and an incline excavation outside of the prism.

The daily average number of steamshovels at work during the month was 45.78 and the total number of shovel days was 1,144½, as compared with 46.27 at work during the month of March, with 1,203 shovel days.

For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'k'g days.	Av. yards per shovel day.
		Rock.	Earth.			
1911:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
April	1,470,752	1,227,485	243,267	44.71	24	1,370.70
1912:						
April	1,624,947	1,287,364	337,583	45.78	25	1,414.30

Rainfall at Empire: 1911, 3.93 ins.; 1912, 2.64 ins.

The above table shows the average output per shovel to be 3.12 per cent greater in April, 1912, than in the corresponding month of the previous year.

The total amount of material excavated from the prism in the Culebra section of the Central Division in April, 1912—1,429,048 cubic yards—was the highest record in that section for the month of April.

The total estimated amount of material to be removed in the Central Division according to revised estimate of July 1, 1911, was 101,801,296 cubic yards, and up to May 1, 1912, 91,626,193 cubic yards had been removed, leaving 10,175,103 cubic yards yet to be removed in order to complete all excavation in the Central Division. From these figures, it will be seen that 90 per cent of all excavation in the Central Division had been accomplished up to the close of the month of April, and 10 per cent yet remained uncompleted.

Considering the two sections which compose the Central Division, the excavation completed, and that to be completed, at the close of April operations was, as follows:

CULEBRA SECTION.	*Cu. Yds.*
Completed	79,263,262
To be completed	10,180,743
CHAGRES SECTION.	*Cu. Yds.*
Completed	12,362,931

From the above figures, it will be seen that the Culebra section, locally known as the "Culebra Cut," was 88.62 per cent completed, with 11.38 per cent to be completed. The Chagres section was completed so far as dry excavation is concerned, but it is estimated that it will be necessary to remove about

300,000 cubic yards of wet excavation in this section.

During the month, 16,985 cubic yards of material were dumped in the embankment for the new roadbed for the relocation of the Panama railroad, increasing the total amount used for this purpose to 4,171,428 cubic yards.

During the month, 459 cubic yards of material were hauled to Gatun for use in the construction of the Dam, which increased the total amount to 5,374,310 cubic yards.

There was also furnished to the Pacific Division 7,560 cubic yards of material for backfill at Pedro Miguel Lock.

The daily average number of laborers at work on the whole division during the month was 7,294, and the daily average number of gold employes was 792.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

Excavation—The total excavation during the month amounted to 195,117 cubic yards, of which 83,327 cubic yards were classified as earth, and 111,790 cubic yards as rock.

Filling and Embankment—During April, 67,385 cubic yards of dry filling were added to the prism of the west dam at Pedro Miguel, increasing the total amount of material in place at the close of the month to 545,755 cubic yards. The backfill at Pedro Miguel was increased by 33,822 cubic yards, the total amount in place at the end of the month aggregating 585,260 cubic yards.

At Miraflores, 26,292 cubic yards were added to the dry fill in the toes of the west dam. The total quantities of dry and hydraulic filling in place at the end of the month were 1,172,634 cubic yards, and 661,048 cubic yards, respectively. The backfill was increased by 43,980 cubic yards, the total aggregating 517,724 cubic yards at the end of the month.

Pedro Miguel Lock—Excavation in the Canal prism, between the Pedro Miguel and Miraflores locks, was continued, two steam shovels being employed during the greater part of the month, the spoil being used for filling the core of the west dam, and for backfilling behind the east lock wall. Work was commenced on the erection of a wooden trestle bridge across the lower end of the west lock chamber. By this means, trains will be run in to the completed portion of the south guide wall for the purpose of filling in, as well as supplying materials for completing the south end of the guide wall. The amount of iron placed in the masonry aggregated 124,396 pounds.

Concrete Work—The total amount of concrete and large stone laid at Pedro Miguel was 9,460 cubic yards, as compared with 9,459 cubic yards during March. The concrete was placed, as follows: Four thousand three hundred and thirty cubic yards in the north center guide wall, 690 cubic yards in the northwest wing wall, 1,369 cubic yards in the east wall, 889 cubic yards in the center wall, 1,176 cubic yards in the west wall, 66 cubic yards in the southwest wing wall, and 940 cubic yards in the floors.

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours)	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	3.73
Average number of mixers per day	4.52
Average hourly output per mixer (actual working time) cu. yds	17.26
Large stone laid, cu. yds	
Concrete laid, cu. yds	9,460.00
Total concrete laid, cu. yds	9,460.00

Average number of mixers—4.52—consisted of one 2-cubic yard and five ½-cubic yard mixers. Placing plant consisted of a daily average of 4.04 locomotive cranes and derricks.

Miraflores Locks—Rock and sand storage bins for an auxiliary mixing plant, together with one of the two 2-cubic yard concrete mixers, were installed in the east wall of the lower lock, which, in addition to a similar plant in the east wall of the upper lock, will supply concrete for the chamber cranes in the construction of the center and center guide walls of the lower lock. Dry excavation in the Canal prism, immediately south of the locks, and filling on the east and west toes of the west dam were continued during the month. Work was continued in connection with backfilling behind the east and west lock walls. The sinking and filling of concrete caisson foundations for the north center guide wall, and the construction of the reinforced concrete wall base girders, supported by the caisson piers, were continued. During the month, the amount of iron placed aggregated 801,644 pounds.

Concrete Work—The total amount of concrete and large stone laid at Miraflores was 107,211 cubic yards, as compared with 83,722 cubic yards during March. The concrete was placed, as follows: Three thousand two hundred and twelve cubic yards in the north center guide wall, 32,276 cubic yards in the east wall, 30,893 cubic yards in the center wall, 29,075 cubic yards in the west wall, 2,279 cubic yards in the floors, and 16 cubic yards in the air compressor.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	12.00	8 & 12.00
Average number of hours per day worked laying concrete and large stone (actual working time)	6.37	6.47
Average number of mixers per day	7.88	10.00
	Cu. Yds.	*Cu Yds.*
Average hourly output per mixer (actual working time)	32.57	27.21
Average amount of concrete and large stone laid per hour, per berm, or chamber crane (actual working time)	68.71	....
Large stone laid	50 00	....
Concrete laid	73,974.00	23,711.00
Total concrete laid	74,024 00	23,711.00

Permanent plant consisted of four berm cranes and three chamber cranes, each working 12 hours a day, and one chamber crane working eight hours a day.

Auxiliary plant consisted of two 2-cubic yard mixers working 12 hours a day, and a daily average of 8.32 ½-cubic yard mixers working eight hours a day. Auxiliary placing plant consisted of a daily average of 1.32 locomotive cranes and derricks.

DISTRICT NO. 2—DREDGING.

The following is a statement of the output of the six dredges, which were in operation during the month, and of the amount of material excavated hydraulically:

Dredge.	Type.	Work. Earth.	Work. Rock.	Plant. Earth.	Plant. Rock.	Total.	Remarks.
		Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	
Cardenas	Dipper	10,819	3,382	7,650	....	21,851	Place measurement
Corozal	Ladder	7,421	7,420	....	....	14,841	Place measurement
Marmot	Ladder	13,465	4,022	....	....	17,488	Place measurement
Badger	Ladder	....	....	109,530	....	109,530	Place measurement
Mole	Ladder	7,860	10,000	....	....	17,860	Scow measurement
Culebra	Suction	230,878	....	....	....	230,878	Scow measurement
Total	....	270,444	24,824	117,180	....	412,448	
Hydraulic excavation	....	*88,727	....	....	....	88,727	Place measurement
Grand total	....	359,171	24,824	117,180	....	501,175	

*Excavated from Canal prism, south of Miraflores lock site.

CHAMÉ SAND EXCAVATION.

Approximately 51,245 cubic yards of sand were excavated at Punta Chamé and delivered at Balboa.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, and oil pipe lines were maintained and extended, as required, to facilitate construction work.

The work on the Panama municipal improvements was completed.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours)	8 & 12.00
Average number of hours per day (actual working time)	9.43
Average number of cubic yards crushed per hour per working day	248.53
Average number of cubic yards crushed per working hour	350.98
Total output for the month	87,770.00

Relocation of Panama Railroad.

During the month, 7,532 cubic yards of material were excavated, increasing the total excavation at the close of the month to 10,168,759 cubic yards, and 41,156 cubic yards of material were placed in embankment, increasing the total for this purpose to 16,425,292 cubic yards.

No temporary trestle was driven during the month. At the end of the month, there were 64,512 linear feet of 70-pound and 163,908 linear feet of 90-pound, track. The force averaged 595 men.

Quartermaster's Department.

LABOR.

There was practically no change in the labor situation during the month.

MATERIAL AND SUPPLIES.

The value of material received from the United States during the month was $993,652.06. Supplies were delivered by 41 steamers, the total weight of cargo aggregating 47,117 tons, exclusive of lumber, piling, and ties.

Subsistence Department.

The operation of the European laborers' messes, the colored laborers' kitchens, and the line hotels, showed a net profit of $2,320.15. The operation of the Hotel Tivoli showed a net profit of $6,111, and there was a net profit on restaurants, penitentiaries, tugs, and dredges of $174.58. The net profit on subsistence operations was $8,605.73.

Department of Civil Administration.

COURTS.

During the month, two civil cases and one criminal case were disposed of in the Supreme Court. One hundred and fifteen civil and 58 criminal cases were disposed of in the Circuit Courts and 155 civil and 662 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for April amounted to $363,626.30, and the fees to $1,739.57. Receipts from stamp and card sales and newspaper postage aggregated $6,942.38. The total collection of revenues made by the division was $20,283.99, and the collection on account of court fines, costs, and fees, $3,671.48.

Twenty-six vessels entered at, and the same number cleared from, the port of Ancon; and 35 vessels entered at, and 34 cleared from, the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 641, of whom 589 were men and 52 women. Twenty-five nations, or forty-nine separate states and dependencies, were represented. The total number of arrests for the month was an increase of two, as compared with the month of March. Ten convicts were committed to the penitentiary and 12 were discharged, leaving 143 convicts in confinement at the close of the month. The cost of guarding and subsisting the convicts was $2,911.83, and the value of their work on Canal Zone roads was $2,491.20.

DIVISION OF FIRE PROTECTION.

Forty-five fires were reported in the Canal Zone during the month, as compared with 65 in March. The damage to Commission property was $2,290, and to private property, $28.50.

DIVISION OF PUBLIC WORKS.

In the city of Panama, the average daily consumption of water was 1,361,355 gallons, and in Colon, 1,297,578 gallons.

The usual inspection and maintenance work of this division was performed during the month.

DIVISION OF SCHOOLS.

The net enrollment in the white schools during the month was 1,230, and the average daily attendance, 962,3, or 94.3 per cent of the enrollment; and in the colored schools the net enrollment was 1,474, and the average daily attendance 728.9, or 81.1 per cent of the enrollment. Forty-six white and 28 colored teachers were employed in the division on April 30.

Department of Sanitation.

The total number of deaths from all causes among employes was 48. These were divided, as follows: From disease, 37, and from violence, 11, giving the annual average per thousand of 8.77 and 2.61, respectively, on the basis of the number of employes estimated by the Department of Sanitation. The annual average death rate per thousand among employes for the month of April, 1911, was 9.38.

The annual average death rate per thousand in the cities of Panama, Colon, and in the Canal Zone, including both employes and nonemployes, based upon the population as estimated by the Department of Sanitation, was 17.21.

The average annual death rate per thousand for the month of April, 1911, among the same classes of population, was 17.74.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: For whites, 3.74, blacks, 10.48, giving a general average for disease of 8.77. For the same month during 1910, the annual average death rate per thousand from disease was: Whites, 4.48, blacks, 9.97, giving a general average of 8.62; and for the same month during 1911: Whites, 2.85, blacks, 7.67, giving a general average of 6.42.

Among employes during the month, deaths from the principal diseases were, as follows: Chronic nephritis, 2; dysentery, clinical, 1; haemoglobinuric fever, 1; malarial fever, E. A., 1; organic disease of heart, 4; pneumonia, 4; tuberculosis, 9; typhoid fever, 1, leaving a balance of 14 deaths from all other diseases, and 11 deaths from external violence.

No cases of yellow fever, smallpox, or plague originated on, or were brought to the Isthmus.

Respectfully,
GEO. W. GOETHALS, *Chairman.*

Memorial Day Services.

In accordance with a program drawn up by the 1912 Memorial Day committee, and approved by Colonel Goethals, Memorial Day will be observed at Ancon, Thursday, May 30. There will be a special train for the members of military and fraternal organizations who desire to take part in the exercises. Train will leave Colon at 7 a. m., and stop at all stations ten minutes after train No. 21. Returning, the train will leave Panama at 4.15 p. m.

Immediately upon arrival at Panama, a parade will be formed to march to Ancon cemetery, where appropriate services will be held. The U. S. M. C., Tenth Infantry, and I. C. C. bands will furnish music, Justice H. A. Gudger will deliver the address, and the boy scouts and schoolgirls will decorate the graves.

All members of military and fraternal organizations are invited to cooperate in making this a memorable day on the Isthmus. A special invitation is extended to the Blue and the Gray, the veterans of the Civil War.

On Sunday, May 26, Memorial services will be held at Mount Hope. Transportation will be provided by special tickets on train No. 20, leaving Panama at 6.40 a. m. A special train will leave Colon at 8.30 a. m., to meet train No. 20 at Mount Hope. The joint committee in charge of the exercises consists of Messrs. E. M. Bucklin, John Feckstein, W. D. Rodgers, John Abramson, L. E. DuBois, and W. H. Kromer, the latter being the secretary.

American Veterans of Foreign Service.

The regular monthly meeting of the American Veterans of Foreign Service will be held in the courtroom, Cristobal, C. Z., Saturday evening, May 25. All comrades are invited to attend, as important business in connection with the Memorial Day exercises will be disposed of.

Improved Order of Red Men.

All members of the order are requested to attend Memorial Day services to be held at Mount Hope, Sunday, May 26. Transportation will be furnished by special tickets on train leaving Panama at 6.40 a. m. These tickets will be good on any train leaving Colon on that day.

United Spanish War Veterans.

The next regular meeting of Chagres Camp, No. 2, U. S. W. V., will be held at the Empire lodge hall on Sunday, May 26, at 3 p. m. Final arrangements for the observance of Memorial Day will be made.

Suicide.

The body of Charles R. Gould, first-class policeman at Gatun, was found floating in Gatun Lake on the afternoon of May 13, and the verdict of the coroner's jury was that he died from a self-inflicted bullet wound in the head, fired while he was standing in such a position that he fell into the lake after being struck. Mr. Gould was born in October, 1880, was single, and had been on the Isthmus seven months, coming here from Narragansett Pier, R. I.

OFFICIAL CIRCULARS.

May 30, a Holiday.

CULEBRA, C. Z., May 20, 1912.

CIRCULAR No. 443:

Decoration Day, Thursday, May 30, 1912, will be observed as a holiday in the Canal Zone, and, as far as practicable, all public business will be suspended on that day.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Pay for Transfer Time of Gold Hourly Employes.

CULEBRA, C. Z., May 18, 1912.

CIRCULAR No. 357-D:

Effective this date, gold hourly employes transferred from one station to another within the Canal Zone limits, with the exception of Toro Point and Naos Island, will be allowed four hours' pay when such transfer necessitates the transfer of quarters, this allowance to cover all time required for the checking out of tools, transit time, transportation and arrangement for baggage.

For the transfer of men to Porto Bello, Toro Point and Naos Island, a minimum of four hours' time will be allowed, and, in addition, any time in excess of four hours which is absolutely necessary for them to reach their destination.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Packing of Gauges, Clocks, Etc., for Shipment to Gorgona Shops.

CULEBRA, C. Z., May 18, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

Attention is invited to the fact that proper care is not being exercised in the packing of gauges, clocks, etc., shipped to Gorgona shops for repairs. Watchman's clocks have been received in gunny sacks, and gauges loosely packed in boxes, so that they can slide past each other when the boxes are turned over, etc., which has resulted in the smashing of all crystals, pulling off hands, and other unnecessary damage. Greater care in the packing of such equipment for shipment is enjoined on the part of all departments and divisions.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Examiner of Accounts.

CULEBRA, C. Z., May 14, 1912.

CIRCULAR No. 442:

Effective May 14, 1912, Mr. T. L. Clear will act as Examiner of Accounts during the absence of Mr. H. A. A. Smith.

GEO. W. GOETHALS, *Chairman.*

Acting Receiving and Forwarding Agent, P. R. R.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT,
COLON, R. P., May 15, 1912.

CIRCULAR No. 91:

Heads of Departments: During the absence of Mr. R. W. Bergin, receiving and forwarding agent, Colon, on leave, effective May 16, 1912, Mr. J. C. Angel is appointed acting receiving and forwarding agent.

J. A. SMITH, *General Superintendent.*

Electrical Superintendent, Mechanical Division.

GORGONA, C. Z., May 15, 1912.

TO ALL CONCERNED:

Effective this date and to continue during the absence of Electrical Superintendent Rowe on leave, Mr. W. L. Fey will act as electrical superintendent of this division.

A. L. ROBINSON,
Superintendent, Mechanical Division.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, May 18, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia	Alhajuela	Gamboa	Bohio	Gatun Lake
Sun., May 12..	125.7	91.6	44.2	17.5	17.5
Mon., May 13..	126.6	93.0	45.8	17.8	17.7
Tues., May 14.	131.8	95.5	45.0	18.0	17.9
Wed., May 15..	131.9	96.6	48.6	18.5	18.4
Thurs., May 16	125.7	92.2	45.2	18.6	18.5
Fri., May 17...	125.2	91.7	44.2	18.6	18.6
Sat., May 18...	131.1	96.1	48.0	18.8	18.8
Height of low water to the nearest foot..	125.0	91.0	44.0		

The following ships arrived at or departed from the port of Balboa during the week ending May 18:

Arrivals—May 12, *San Juan*, from San Francisco; May 13, *Mexico*, from Valparaiso; May 13, *Monari*, from Buenaventura; May 13, *Ecuador*, from Guayaquil; May 16, *Peru* (P. S. N.), from Guayaquil.

Departures—May 13, *Chile*, to Guayaquil; May 14, *Mantaro*, to Callao; May 15, *Huasco*, to Valparaiso; May 16, *F. H. Leggett*, to San Francisco; May 16, *Meteor*, to Portland; May 17, *Leelanow*, to San Francisco.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The moving picture schedule for the week, May 27 to June 1 is, as follows: Monday, Culebra; Tuesday, Gorgona; Wednesday, Corozal; Thursday, Gatun; Friday, Empire; Saturday, Cristobal.

Miss Gay Zenola MacLaren's dates at the various clubhouses are, as follows: Empire, Thursday, May 30; Gorgona, Friday, May 31; Culebra, Saturday, June 1; Gatun, Monday, June 3; and Friday, June 14; Cristobal, Tuesday, June 4; Corozal, Friday, June 7, and Tuesday, June 18.

COROZAL.

The new bowling alleys will be opend for use on Memorial Day. An orchestra has been engaged to furnish music for an "Open house" on that night. Games are being arranged between local teams for the opening day.

CULEBRA.

A concert will be held by the glee club on Tuesday evening, June 4.

Volleyball will be played every Tuesday from 5 to 6 p. m. Eight men turned out on Tuesday evening of last week.

Culebra took three straight games from Camp Elliott on Saturday evening. Scores:

Culebra.				Camp Elliott.			
Crain	90	113	81	Kribel	85	85	88
Sterns	91	78	102	Allen	80	101	76
Palmer	101	115	92	McAbee	92	83	93
Mengel	98	92	93	Bees	92	100	92
Case	100	87	94	Weigelt	86	92	88
Total	480	485	462		435	461	437

Empire will bowl at Culebra on Saturday evening. May 25.

EMPIRE.

The duckpin bowling league games played May 18, between Gorgona and Empire, resulted in Empire winning two out of three. Scores:

Empire	433	438	451	Gorgona	416	439	429

The billiard games played between Culebra and Empire on Saturday, May 18, resulted in each side winning and losing a game.

On Tuesday evening, May 28, the members of the Empire clubhouse will celebrate the fifth anniversary of the opening of the building. Invitations have been issued to all its members and their families. A special program has been prepared, after which there will be a reception, followed by refreshments.

GORGONA.

The following games of duckpins were rolled Saturday night, May 18, in the interassociation tournament between Empire and Gorgona:

Empire.				Gorgona.			
King	90	88	83	Seebt	84	79	103
Nelson	93	92	88	Denst	85	90	77
Danielson	97	98	98	Moyer	89	81	88
Giavelli	97	87	85	Dunlop	101	81	96
Gustavson	81	82	90	Haggerty	87	100	82
Total	458	447	444		446	422	446

In the billiard game between Gorgona and Cristobal, Saturday night, May 18, Pack of Cristobal defeated Wolcutt of Gorgona, score 100 to 83.

The "smoker" to be given in honor of the Gorgona indoor baseball team, will be held on Tuesday, May 28, at 7.45 p. m. A program, consisting of musical numbers and vaudeville sketches, is being arranged. A picture of the team will be taken May 19, at 9 a. m.

F. L. Bernsee, the Isthmian checker champion, appeared at the clubhouse, Saturday, May 18. Out of the sixty games played simultaneously with twenty different men, Messrs. Miller and Payton won one each, and Messrs. Lynn, Payton, Taylor, Hosden, and Hill had a draw game each, while Mr. Dunn of Culebra had two games, both draws.

GATUN.

The results of the Gatun-Corozal pool and billiard match on Saturday evening, May 18 were, as follows:

Pool.

Gatun.		Corozal.	
DePoorter	100	Roberts	70
Hughes	100	Baker	73
Cheeks	100	McKee	94
Galloway	92	Roberts	100

Billiards.

Wurster	100	Thompson	84
Townsley	73	Triholet	100

The above pool games are the last which Gatun plays in the Isthmian tournament, and although other teams still have games to play, Gatun has already won enough to insure its winning the pennant. The Gatun team consists of Louis DePoorter, Geo. L. Hughes, D. C. Galloway, W. H. Cheeks, and W. L. Dalton. Each will receive a gold medal as a prize, and the Gatun clubhouse will receive a silver cup.

Cristobal took two out of three games of duckpins at Gatun on Saturday, May 18.

Eight sets of duckpins and ten new duckpin balls have been added to the equipment of the clubhouse.

On Saturday, May 25, Camp Elliott bowls at Gatun, and Culebra plays billiards at Gatun.

A German orchestra will give a concert at Gatun on Monday, May 27.

Physicial Director Dwelle is reorganizing the local branch of the Health League. Any member may join.

The checker club, F. D. Gartrell, president, is open for challenges from any other club on the Isthmus.

The Gatun executive council will meet on Friday, May 24.

A one-man duckpin tournament started on Wednesday, May 22.

A pair of bowling shoes will be given as a prize to the member bowling the three highest games of duckpins for the period May 15 to May 30.

CRISTOBAL.

On Saturday night, May 18, the local bowlers took three games from Gatun on the Cristobal alleys. Scores:

Gatun.				Cristobal.			
Denniss	75	89	89	Louch	94	78	88
Hodges	92	88	75	Whittles	80	77	89
Dickson	87	90	88	Collins	88	92	94
Huttlemaier	91	93	82	Bullard	95	112	84
Swallow	97	87	89	Herring	123	90	81
Total	442	447	423		480	449	436

On Thursday evening, May 16, Mr. F. L. Bernsee, the Isthmian checker champion, met 21 players in simultaneous checkers before a good-sized audience. A total of 63 games was played, Mr. Bernsee losing two, with 57 games won, and four draws. The winner of the two games was Dr. Dunn of Culebra. The draws were credited to Messrs. Dunn, Herrington, Burrows, and Putnam. During the games, punch was served.

The next session of the debating club will be held on Wednesday evening, May 29. The announcement of the subject will be made by bulletin. All men are invited to attend and participate in the open discussion.

On Saturday evening, May 25, the Gorgona duckpin bowling team will play Cristobal team on the local alleys. A team of the Cristobal association will also play at Gorgona.

Band Concert.

A band concert will be given by the Isthmian Commission Band at Empire C. Z., Sunday, May 26, 1912, at 6 p. m. The program follows:

1. March—*Col. Estey*....................Bagley
2. Selection—*Paradise of Mahomet*..Planquette & Ganne
3. Waltz—*Golden Sunset*....................Hall
4. Overture—*William Tell*...............Rossini
5. (a) March—*Take a Tip From Father*............ Berlin & Snyder
   (b) Two Step—*Everybody's Doing It Now*........ Berlin
6. Idyl—*Softly, Unawares*..................Lincke
7. —*Gems of Stephen Foster*................Tobani
8. Medley Selection—*Popular Hits*........Schultz
9. March—*Joe Weber*....................Appelles

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Gorgona, June 2, at 6 p. m.

Rainfall from May 1 to 18, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	7.06	12	9.03
Balboa	7.00	12	8 39
*Miraflores	3.60	12	6.76
Pedro Miguel	3.30	12	6.13
Rio Grande	2.48	8	5.20
Central Section—			
Culebra	3.19	8	6.06
*Camacho	2.00	8	3.68
Empire	1.65	8	3.62
Gamboa	1.62	9	3.81
*Juan Mina	1.89	15	5.82
Alhajuela	2.89	14	7.65
*El Vigia	1.65	15	6.83
*Gorgona	3.40	9	3.81
Frijoles	1.23	18	3.92
*Monte Lirio	1.40	18	4.31
Atlantic Section—			
Gatun	2.39	18	4.10
*Brazos Brook	1.03	18	1.73
Colon	1.07	18	1.92

*Standard rain gage — readings at 5 p. m., daily. Automatic rain gage at unstarred stations — values midnight to midnight.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending May 29, 1912. (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
May 23	......	2.22	8.34	2.58	9.00
May 24	......	3.25	9.40	4.07	10.12
May 25	......	4.33	10.50	5.15	11.27
May 26	......	5.40	11.58	6.20	......
			P.M.		
May 27	12.37	6.43	12.57	7.18	......
May 28	1.37	7.40	1.52	8.10	......
May 29	2.28	8.30	2.40	8.57	......

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steamship Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line.

NEW YORK TO CRISTOBAL.

Panama	P. R. R.	Wednesday	May	15
Allianca	P. R. R.	Tuesday	May	21
Colon	P. R. R.	Monday	May	27
Advance	P. R. R.	Monday	June	3
Panama	P. R. R.	Saturday	June	8
Allianca	P. R. R.	Friday	June	14
Colon	P. R. R.	Friday	June	21
Advance	P. R. R.	Thursday	June	27
Panama	P. R. R.	Wednesday	July	3
Allianca	P. R. R.	Tuesday	July	9
Colon	P. R. R.	Monday	July	15
Advance	P. R. R.	Monday	July	22
Panama	P. R. R.	Saturday	July	27
Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Monday	May	27
Allianca	P. R. R.	Sunday	June	2
Colon	P. R. R.	Sunday	June	9
Advance	P. R. R.	Saturday	June	15
Panama	P. R. R.	Friday	June	21
Allianca	P. R. R.	Thursday	June	27
Colon	P. R. R.	Wednesday	July	3
Advance	P. R. R.	Tuesday	July	9
Panama	P. R. R.	Monday	July	15
Allianca	P. R. R.	Sunday	July	21
Colon	P. R. R.	Sunday	July	28
Advance	P. R. R.	Saturday	Aug.	3
Panama	P. R. R.	Friday	Aug.	9
Allianca	P. R. R.	Thursday	Aug.	15

NEW YORK TO COLON.

Santa Marta	U. F. C.	Wednesday	May	15
Prinz August Wilhelm	H.-A.	Saturday	May	18
Turrialba	U. F. C.	Saturday	May	18
Metapan	U. F. C.	Wednesday	May	22
Oruba	R. M.	Saturday	May	25
Prinz Sigismund	H.-A.	Saturday	May	25
Tivives	U. F. C.	Saturday	May	25
Zacapa	U. F. C.	Wednesday	May	29
Sixaola	U. F. C.	Saturday	June	1
Prinz Joachim	H.-A.	Saturday	June	1
Almirante	U. F. C.	Wednesday	June	5
Thames	R. M.	Saturday	June	8
Carrillo	U. F. C.	Saturday	June	8
Prinz Eitel Friedrich	H.-A.	Saturday	June	8
Prinz August Wilhelm	H.-A.	Saturday	June	15
Turrialba	U.F.C.	Saturday	June	15
Metapan	U. F. C.	Wednesday	June	19
Prinz Sigismund	H.-A.	Saturday	June	22
Trent	R. M.	Saturday	June	22

COLON TO NEW YORK.

Almirante	U. F. C.	Thursday	May	23
Prinz Eitel Friedrich	H.-A.	Monday	May	27
Thames	R. M.	Tuesday	May	28
Santa Marta	U. F. C.	Thursday	May	30
Turrialba	U. F. C.	Tuesday	June	4
Prinz August Wilhelm	H.-A.	Tuesday	June	4
Metapan	U. F. C.	Thursday	June	6
Prinz Sigismund	H.-A.	Monday	June	10
Trent	R. M.	Tuesday	June	11
Tivives	U.F.C.	Tuesday	June	11
Zacapa	U. F. C.	Thursday	June	13
Sixaola	U. F. C.	Tuesday	June	18

NEW ORLEANS TO COLON.

Parismina	U. F. C.	Saturday	May	18
Cartago	U. F. C.	Wednesday	May	22
Abangarez	U. F. C.	Saturday	May	25
Heredia	U.F.C.	Wednesday	May	29
Atenas	U.F.C.	Saturday	June	1
Orleanian	U. F. C.	Wednesday	June	5

COLON TO NEW ORLEANS.

Atenas	U. F. C.	Thursday	May	23
Orleanian	U. F. C.	Thursday	May	23
Parismina	U.F.C.	Thursday	May	30
Cartago	U.F.C.	Thursday	May	30
Abangarez	U. F. C.	Thursday	June	6
Heredia	U. F. C.	Thursday	June	6

P. R. R. steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York via Kingston at 10 a. m. on sailing dates. The *Prinz August Wilhelm* and *Prins Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct leave on Thursdays at 3 p. m.; for New Orleans via Limon, on Thursdays at 2 p. m.; ships for New York via Kingston, on Tuesdays at 2 p. m. and Thursdays at 11 a. m.; for Bocas del Toro, on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, MAY 29, 1912. No. 40.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Excavation Work in Connection with Balboa Terminals.

In connection with the work on the new Balboa terminals, the division engineer of the Pacific Division has been requested to prepare and submit an estimate of the cost of the excavation required along the northwest side of Sosa Hill, in order that the Balboa road and the two Panama railroad tracks may be thrown over to their new location. As the zone of the excavation operations includes very nearly all of the quarters comprised in the American settlement of old Balboa, upward of 40, actual work cannot be started until the buildings have been removed, which will be done by the Quartermaster's Department. The plans for the new terminal docks, which are to be constructed in this vicinity, are being prepared in the office of the division engineer of the Pacific Division, and will be completed shortly.

Lighters Withdrawn from Sale.

The six steel lighters, formerly used in hauling cement from Cristobal to Gatun, advertised for sale in Circular No. 709 from the Washington office of the Isthmian Canal Commission, note of which was made in THE CANAL RECORD of April 24, 1912, have been withdrawn from sale. They are to be used as coal lighters and will continue in use as such after the Canal is completed.

Upper Guard Gates at Gatun Locks.

Work is being pushed on the three uncompleted leaves of the upper guard gates at Gatun Locks. Since the intakes for the culverts were closed with steel bulkheads, the lowest points at which the water of Gatun Lake would flow into the lock chambers are over the sills of the upper guard gates, which are at elevation 37 feet four inches above sealevel. At the present rate of rising, the surface of the lake would be at this height in approximately three weeks. The superintendent of erection of the gates anticipates that they will be made watertight by that time. A seal, consisting of a rubber flap, has been devised to prevent the seeping of water between the gates and the sills. This device is now being fitted to the upper guard gates, and will, it is believed, reduce the leakage to the minimum.

The erection of gates at Gatun Locks, except at the bridge in the upper level, has been at a standstill for the past six weeks, owing to lack of material. The steamships *Belosco* and *Nordpol* recently brought a considerable quantity of material, and the work of erection at Gatun will proceed more rapidly.

Extension of Control Over Lake Area.

In a decree issued by the President of the Republic of Panama, under date of March 29, 1912, described as resolution No. 22, public proclamation was made that the Republic of Panama no longer exercises any authority in the area to be covered by Gatun Lake, which extends beyond the lines of the 10-mile strip, the same having passed into American control in accordance with the Canal treaty.

The area of the territory affected by the decree is along streams contributing to Gatun Lake, notably the Trinidad, Gatun, and Chagres Rivers, and comprises a total of about 70 square miles. Like the rest of the lake area, it is to be depopulated. Following the posting of placards, warning the public against trespassing, the Canal Zone police will patrol the territory and assist the inhabitants to move beyond the 87-foot contour line. Five first-class and three second-class policemen are engaged in the work. About 300 native houses have been destroyed by the police to date in all of the lake area.

New Folding Machine at Mount Hope Printing Plant.

A new folding machine, manufactured by the Dexter Folding Company of New York, has been installed at the Mount Hope printing plant. The machine will fold sheets 10 by 15 inches in three-fold work, or 12 by 16 inches in four-fold work, to as large as 25 by 38 inches. It can be fed by hand at the rate of about 40 sheets per minute, or 2,400 per hour, and is equipped with a moving side guide for registering the sheet by the edge after it enters the machine. THE CANAL RECORD will hereafter be made ready for distribution on this folder, which, it is expected, will expedite the delivery by about one-half day.

Hotel Tivoli Improvements.

A second story is being added to the three houses in the rear of the Hotel Tivoli, at one time used as servants' quarters, but during the past dry season used as an annex to accommodate the overflow of guests at the hotel. When the improvements are completed, each building will contain 16 rooms, eight on each floor. There will be also two bathrooms on each floor, and a lavatory in each room. These buildings, together with another two-story building nearby, which is already utilized as an annex, will provide a total of 64 additional rooms outside of the hotel proper.

It is probable that before the advent of the next dry season, the front porch of the lower floor of the hotel may be widened, in order that the part on which the dining room opens may be used as a dining room annex. The present porch was so used during the past dry season, and the plan was greatly appreciated by the guests. In order to make the porch uniform for its entire length in front of the hotel, that part along the west wing may also be widened.

East Dam of Gatun Locks.

The construction of the east dam at Gatun, between the Locks and the hill, crowned by the division office building, has been delayed by the steamshovel excavation in the anchorage basin, since railway tracks crossing the site of the dam could not be removed until the shovel was brought out. These tracks have been taken up and the 4-foot concrete core wall extending from the side wall of the Locks to the hill, is being brought to its final elevation of 88 feet above sealevel. Clay is being dumped on the lake side of this wall, and a borrow pit, in which one steamshovel will be used, has been started on a rock bluff alongside the relocated line of the Panama railroad, three-fourths of a mile east of Gatun station, to furnish rock for filling on the lower side of the wall.

Change in Train Schedules.

A new passenger train schedule will go into effect on the Panama railroad early next month. It provides for the reinstatement of train No. 6, formerly leaving Panama at 1.30 p. m., which was abolished on February 15. This train, while it carries only a limited number of passengers, is of considerable convenience to Canal employes, and others, whose duties take them from one point to another on the railroad. Train No. 4, which now leaves Panama at 10.55 a. m., will be set back, leaving at about 10.20. The shuttle train, operating between Colon and Gatun, will be discontinued on the same date, and the traffic will be handled thereafter by the regular trains.

In view of the fact that the tourist season is practically over, and that, in consequence, there are fewer people to take advantage of the running of the sight-seeing train, the schedule will be shortened, and the train will be run three days each week only, effective June 1, 1912, instead of six days, as at present. The new schedule will be substantially, as follows:

Monday, trip through Culebra Cut and Pacific Division—Train leaves Panama railroad station at 7 a. m., goes through Culebra Cut, then to Culebra, where opportunity will be

NOTES OF PROGRESS.

(*Continued.*)

given to see the work from the observation platform, and to view the lock models in the Administration building. Lunch will be served to tourists at 12.45 o'clock at the Commission hotel. Persons wishing to go to Colon may take the train that arrives at Culebra at 11 a. m., or at about 2.05 p. m., and to Panama, that which arrives at 12.19 p. m. The train will leave Culebra station at about 1.30 p. m., for the trip to Pedro Miguel Lock, Miraflores Locks and dam, and the Pacific entrance, returning to Panama in time to allow passengers to take the 5.25 p. m. train for Colon. Persons wishing to make the trip over the Pacific Division only should take the regular passenger train from Panama at about 10.20 a. m., getting off at Pedro Miguel, where they can obtain lunch at the Commission hotel. The sight-seeing train leaves the station there at about 2 p. m.

Thursday, trip to Gatun Locks and Dam, and over Atlantic Division—The train will leave Colon at 8 a. m., and 1.30 p. m., making two trips, the departure from Gatun station for the tour over the Locks and Dam being made at 8.30 a. m., and at about 2 p. m. After the completion of the afternoon trip, the train will go direct to Panama. Persons wishing to take the Atlantic Division trip from Panama must go to Gatun by one of the morning trains, leaving Panama at 6.35 and at about 10.20 o'clock, respectively. These trains arrive at Gatun at about 8.41 a. m., and 12.30 p. m., respectively.

Saturday, trip through Pacific Division and Culebra Cut—Train will leave Panama about 7.45 a. m. and will be operated over the Pacific Division, afterward returning to Panama for lunch. In the afternoon, the train will leave Panama at about 2 p. m., for Culebra and the Central Division, returning to Panama in time for passengers to take the 5.25 p. m. train for Colon.

Regular fare will be charged between Panama and Pedro Miguel; Colon and Gatun, and Gatun and Panama; and one dollar extra will be charged for the trip over each division.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 88 per cent completed, 198,559 cubic yards, out of a total of 225,000, having been placed at the close of work on May 25. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
May 20	96	5.00	2
May 21	104	6.00	1
May 22	86	3.30	1
May 23	80	3.45	1
May 24	80	5.00	1
May 25	24	2.30	1
Total	470	25.45	1.17
Previously reported	198,089		
Grand total	198,559		

Drilling and Blasting in Culebra Cut.

Owing to some inaccuracies in the article under the above caption, which appeared in The Canal Record of May 15, it is reprinted in corrected form herewith:

The 202 tripod drills, at work in varying material in Culebra Cut, made a total penetration of 213,874 linear feet during the month of March, an average of 41.6 feet per drill each day. The number of drill days was 5,142. The 173 well drills in 3,716 drill days penetrated 192,604 linear feet, a rate of 51.8 feet per drill per day. The average of both kinds of drills was 45.9 linear feet per drill per day. The working day is nine hours. These penetrations are regarded as an index of the normal drilling operations in the Cut.

In blasting, 20,133 holes were exploded in all sorts of material. The aggregate depth of the holes was 345,223 linear feet; the average depth was 17.3 feet. In all, 415,709 pounds of dynamite were exploded, an average of 20.7 pounds per hole. The average efficiency of the blasting during the month, in all kinds of materials, was 2.14 cubic yards per pound of explosive.

CONCRETE WORK IN THE LOCKS.

Over 85 per cent of the concrete for the locks is in place, the amount at the close of work on May 25 being 3,688,009½ cubic yards, out of a total of approximately 4,303,486. A total of 25,673½ cubic yards of concrete was laid in the locks during the week ending May 25.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on May 25 being 1,873,036½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending May 25, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
May 20	184	2.58	2					237½
May 21	76	1.35	1					89½
May 22	188	3.42	2					252
May 23	180	3.00	2					226½
May 24	156	2.16	2					156
May 25	232	3.52	2					255
*Portable mixers				200½				
Total	1,016	17.23	1.83	200½				1,216½
Previously reported								1,871,820
Grand total								1,873,036½

The 200½ yards shown for the portable mixer were placed on the following days: May 20th, 53½; May 21st, 13½; May 22nd, 64; May 23rd, 46½; May 25th, 23. Eighty-seven yards of this amount consisted of reinforced concrete.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 95 per cent completed, 846,365 cubic yards, out of a total of 890,750, bucket measurement, having been placed at the close of work on May 25. The record for each of the working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
May 19				52	5.50	1		52
May 20	226	5.75	1	338	33.75	5		564
May 21	266	6.75	1	262	24.00	5		528
May 22	28	1.00	1	134	13.00	4		162
May 23	226	5.50	1	296	24.50	5		522
May 24	278	6.75	1	303	28.00	5		581
May 25	88	2.25	1	286	22.50	4		374
Total	1,112	28.00	1	1,671	151.25	4.83		2,783
Previously reported							4,438	843,582
Grand total							4,438	846,365

MIRAFLORES LOCKS.

Over 68 per cent of the concrete for the system of two twin locks at Miraflores was in place on May 25, the total amount on that date being 968,608 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
May 20	1,984	56.67	8	1,514	23.20	3	399	24.00	4		3,897
May 21	2,142	58.33	8	1,452	23.10	3	424	20.50	3		4,018
May 22	1,704	48.17	8	1,370	22.43	3	349	19.00	3		3,423
May 23	1,780	46.83	8	1,420	21.80	3	270	11.00	2		3,470
May 24	1,578	44.00	8	1,634	23.40	3	481	24.00	5		3,693
May 25	1,244	40.02	8	1,608	23.12	3	411	38.00	5		3,263
Total	10,432	294.02	8	8,998	137.05	3	2,334	136.50	3.67		21,764
Previously reported										3,693	946,844
Grand total										3,693	968,608

RECIPROCAL LICENSE.

Amendment of the Ordinance Providing for the Licensing and Regulation of Motor Vehicles in the Canal Zone.

Be it enacted by the Isthmian Canal Commission, as follows:

That the ordinance providing for the licensing and regulation of motor vehicles in the Canal Zone, enacted by the Isthmian Canal Commission at its 158th meeting on August 25, 1910, and approved by the Acting Secretary of War, October 31, 1910, be, and the same is hereby amended, as follows:

Section 1 is amended so that the same shall now read, as follows:

Section 1. That, hereafter, there shall be collected and accounted for as other similar taxes, the following license taxes from the owners or operators of motor vehicles used or employed on the streets or roads of the Canal Zone, viz.: (1) Excepting motor cycles, (*a*) for each motor vehicle operated for the transportation of freight for hire, or for the transportation of merchandise or freight by any merchant or dealer, Ninety Dollars ($90) per annum; (*b*) for each motor vehicle operated for the transportation of passengers for hire, Fifty Dollars ($50) per annum; (*c*) for each motor vehicle operated for pleasure, Twenty-five Dollars ($25) per annum; and (II) for each motor cycle, Ten Dollars ($10) per annum. *Provided, however*, that for motor vehicles operated over the streets and roads of the Canal Zone, which have already been duly licensed and authorized to operate over the streets and roads of the Republic of Panama, and where the licensees are residents of the Republic of Panama, there may be collected, with the approval of the Head of the Department of Civil Administration, in lieu of the license taxes above enumerated, license taxes, as follows: (I) Excepting motor cycles, (*a*) for each motor vehicle operated for the transportation of freight for hire, or for the transportation of merchandise or freight by any merchant or dealer, Ninety Dollars ($90) per annum; (*b*) for each motor vehicle operated for the transportation of passengers for hire, Thirty Dollars ($30) per annum; (*c*) for each motor vehicle operated for pleasure, Five Dollars ($5) per annum; and (II) for each motor cycle, Two Dollars ($2) per annum; if, reciprocally on the various kinds of motor vehicles in this proviso enumerated, which have already been duly licensed for operation over the streets and roads of the Canal Zone, and where the licensees are residents of the Canal Zone, there are exacted and collected in the Republic of Panama total license taxes or charges, per annum, not exceeding the respective license taxes, in this proviso enumerated; and, in the event that the reciprocal motor vehicle license taxes of the classes herein enumerated are increased in the Republic of Panama over those herein named, there shall be collected in the Canal Zone, with the approval of the head of the Department of Civil Administration, 'reciprocal motor vehicle license taxes equal to the total thus reciprocally charged in the Republic of Panama; and, *Provided further*, that where any motor vehicle licensed in the Canal Zone shall, before the period for which the license is taken expires, be sold or transferred by the licensee to some other person who may desire to continue to use and operate such vehicle over the streets and roads of the Canal Zone, such transferee, by application to the Collector of Revenues, and upon submission of satisfactory evidence of such purchase or transfer, may have the license transferred to him by endorsement made thereon by the Collector of Revenues, authorizing such transferee to operate such motor vehicle under such license, without the payment of any additional license charge or fee.

Approved: May 1, 1912.

H. L. STIMSON, *Secretary of War.*

Notice to Mariners.

Recent survey has developed the existence of a rock shoal, nearly on the center line of the Canal, center of the shoal being opposite a point about 400 feet seaward of angle of the Panama railroad wharf. There is a depth of 28 feet of water on shoal at mean tide, which only gives 18 feet at low water springs. The shoal is about 75 feet wide by 150 feet long, with 42 to 45 feet depths surrounding it at mean tide.

Ships coming to Balboa wharf should avoid sailing near this shoal.

J. ST. C. HUNT, *Port Captain.*

Balboa, C. Z., May 22, 1912.

Drowning.

John D. Kemp, a first-class policeman stationed at Balboa, was drowned near Restingue, one of the settlements on Taboga Island, at about 9 a. m., Wednesday, May 22. He had been sent to the sanitarium only the day before. He was born at Mountain View, Ark., where his father, F. W. Kemp now resides, 26 years ago, was single, and had been on the Isthmus since October 12, 1911.

Missing Men.

Any one having information regarding the whereabouts of Mr. Roy Proctor, who is supposed to be on the Isthmus, is requested to communicate with THE CANAL RECORD.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Gorgona, C. Z., Sunday, June 2, 1912, at 6 p. m.

The next concert will be given at the Hotel Tivoli, Ancon, June 9, at 8 p. m.

CANAL MEDAL AND SERVICE BAR LIST.

Below are published the names of American employes of the Panama Railroad Company, who completed two years of continuous service on the Isthmus during the period ending December 31, 1911, and are, in consequence, entitled to receive the Canal medal; also, a list of American employes of the Panama Railroad Company, who completed their fourth year of service, and are entitled to receive their first service bar, and those who have completed six years of continuous service, and are entitled to receive their second service bar.

The list is now published, in order that it may be carefully checked by those interested. Any omissions, errors in spelling of names, or in the dates from which the service is reckoned, should be promptly reported to the Office of the Chairman, at Culebra, for correction. The heads of divisions are requested to check carefully their lists of American employes on the silver roll, and to report any omissions on the medal and bar lists to the above office.

The list given below completes the publication of all American employes of the Isthmian Canal Commission and the Panama Railroad Company entitled to receive medals and service bars. The list of corrections will be published at an early date.

P. R. R. Service Medal List—1909—1911.

Name. 1911.	*Bar due.*
Bennett, T. J	Aug. 5
Conley, D. F	Aug. 10
Rhoden, N	Aug. 12
Decora, J. G	Aug. 20
Degnan, R. E	Aug. 24
Jaap, G. W	Sept. 14
Harrington, Wm. H	Sept. 18
Davenport, R. T	Oct. 2
Davis, George	Oct. 3
Wood, E. B	Oct. 13
Dinnin, C. J	Oct. 20
Corning, F. W	Oct. 31
Newman, Axel	Nov. 8
Hall, C. E	Nov. 10
Cotton, Charles	Nov. 12
Gross, C. W	Nov. 19
Mohr, A. H	Nov. 26
Stewart, V. A	Dec. 2
Orr, Joseph	Dec. 3
Simcock, E. B	Dec. 3
Potts, L. D	Dec. 29

P.R.R. First Service Bar List—1909–1911.

Name.	*Bar due.*
Reese, Mary	Jan. 1
Rotherford, F. A	Jan. 29
Wall, Percy J	Feb. 4
Williamson, J. D	Feb. 4
Starbuck, David, A	Feb. 12
Arbuckle, E. R	Feb. 18
Essex, W. S	Mar. 6
Fahey, P. J	Mar. 12
Fogle, Ralph	Mar. 14
Misch, John	Mar. 20
Culbertson, W	Mar. 21
Ganserit, R. G	May 20
Malmo, R. H	May 27
Witty, A. E	May 30
Carty, C. G	June 6
Grunewald, F	June 8
Mead, J. P	June 8
Noltee, G. M	June 13
Whitaker, R. W	June. 13
Horton, A	June 24
McKay, Hugh	June 2
Smith, George W	June 25
Sartor, R. H	June 29
Neece, F. O	July 6
Storey, H. E	July 22
Ellison, C. F	July 24
Mock, R. L	Aug. 16
Kramer, G. A	Aug. 18
Masterson, R. W	Aug. 18
Walker, Bertha A	Sept. 1
Smith, J. A	Sept. 2
Beverley, Robert	Sept. 19
Petersen, O. W	Sept. 30
Weaver, J. M	Sept. 30
Kromer, W. H	Oct 1
Mohr, G. E	Oct. 1
Clifton, D. W	Oct. 7
Becker, N. A	Oct. 28
Simonson, C. O	Nov. 1
Bedell, A. G	Nov. 15
Burrows, C. A	Nov. 17
Haag, H. Arthur	Nov. 18
Hirsch, F. S	Nov. 18
Luft, Harry	Nov. 18
MacSparran, W. J	Dec. 4
Stratton, F. H	Dec. 16
Murphy, P. T	Dec. 21
Whitehead, Joseph	Dec. 21

P. R. R. Second Service Bar List—1909–1911

Name.	*Bar due.*
Armiger, George	Feb. 23
Duckworth, J. T	Feb. 23
Simkins, A. B	Mar. 12
Henry, W. D	Mar. 13
Notte, J. G	Mar. 22
Constantine, John	Mar. 29
McCormick, P. C	April 7
Harvey, R. J	April 17
Price, Harvey	April 28
Thompson, F. Y	May 8
Lindersmith, W. W	May 10
Woods, J. T	May 11
Englander, M	May 15
Farrell, W. H	May 15
Gannon, H. F	May 15
Hagan, John	May 15
Larcom, B. L	May 15
Mitchell, E. C	May 16
Mendes, A. S	May 16
Betebenner, H	May 23
Stone, A. K	May 24
Beckell, W. O	May 29
Nelson, C. A	June 5
Patterson, A. C	June 5
Dawson, A. J	July 5
Cleary, J. W	July 12
Potts, I. R	July 12
Weitz, William	July 17
Bushnell, H. H	July 24
Martin, W. A	Aug. 14
Williams, H. J	Aug. 18
Fernandez, F	Sept. 11
Cappers, W. F	Sept. 12
Donovan, S	Sept. 16
Colip, E. H	Sept. 30
Hamilton, C. J	Oct. 3
Bedell, Walter H	Oct. 14
Tysinger, J. D	Oct. 20
McCann, W. E	Oct. 31
Connors, Neil	Nov. 13
Dovell, J. P	Nov. 13
Wilson, H. S	Nov. 14
Campion, R. G	Nov. 25
Culbertson, X. W	Nov. 26
Wentworth, E. A	Dec. 16

EXECUTIVE ORDER.

Petitions of Civil Service Employes to Congress.

It is hereby ordered that petitions or other communications regarding public business, addressed to the Congress, or either House, or any Committee or Member thereof by officers or employes in the civil service of the United States, shall be transmitted through the heads of their respective departments or offices, who shall forward them without delay with such comment as they may deem requisite in the public interest. Officers and employes are strictly prohibited either directly or indirectly from attempting to secure legislation or to influence pending legislation, except in the manner above prescribed.

This Order supersedes the Executive Orders of January 31, 1902, January 25, 1906, and November 26, 1909, regarding the same general matter. WM. H. TAFT.

THE WHITE HOUSE,
April 8, 1912.

Memorial Day Observance.

The order of parade in the exercises to be held at Ancon on Thursday, May 30, in commemoration of Memorial Day, will be, as follows: Escort of mounted Panamanian police; Capt. Peter Johnson and mounted police; grand marshal, Capt. R. E. Wood, U. S. Army; aids, Lieutenant Fleming, U. S. Engineers, Joseph Lawrence, Third U. S. Calvary, Lieutenant Hohl, Tenth U. S. Infantry, E. W. Bucklin, U. S. Rough Riders; band of the Tenth U. S. Infantry; battalion Tenth U. S. Infantry, Capt. F. S. Cocheu, commanding; Col. H. A. Greene, U. S. Army; Chief Justice, H. A. Gudger; Captain Ingram, U. S. Army; Captain Breckenridge, U. S. Army; Sr. Don Gil Sanchez; Sr. Don Julio Quijano; Rev. C. O. Purdy; Rev. Father Collins; band of the U. S. Marine Corps; buglers; firing squad; sailors from the U. S. S. S. *Prairie*; veterans of the Blue and the Gray; Garrison No. 106, Army and Navy Union, O. R. Lampson, commanding; Garrison No. 118, Army and Navy Union, A. B. Kratz, commanding; Chagres Camp, U. S. W. V., John Abramson, commanding; Sibert Camp, U. S. W. V., W. D. Rogers, commanding; Canal Zone Post No. 40, A. V. F. S., H. B. Furlong, commanding; schoolgirls, escorted by boy scouts; Red Cross ambulance, I. C. C. band; Uniform Rank, K. of P., C. R. Chisholm, commanding; Knights of Pythias; Red Men; Odd Fellows; Kangaroos; the Moose.

The parade will be formed immediately after the arrival of the special train from Colon, and will march to Ancon Cemetery, where the following exercises will take place: Invocation, Rev. C. O. Purdy; selection, "Reverie—In silent thought," by the I. C. C. band; reading, President Lincoln's Gettysburg address; selection, "Nearer My God To Thee," by all of the bands, in memory of the musicians of the *Titanic* who played "Bethany," as they went to their watery graves; address, Justice H. A. Gudger; singing of "Onward christian soldiers," by the assemblage, the bands leading; decoration of the graves of the American dead by the schoolgirls and boy scouts; singing of "America;" firing squad; taps; benediction, Rev. Father Collins.

United Fruit Company's Service to England.

The United Fruit Company announces that a service from Colon to Liverpool, England, by way of Kingston, Jamaica, will be placed in effect, beginning with the sailing of the *Heredia* on June 27. This vessel will be followed by the *Sixaola*, sailing from Colon on July 12, and the *Carrillo*, on July 29.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending May 25:

DATE.	Hours worked.	Cubic Yards.
May 13	7.05	3,058
May 14	9.45	2,568
May 15	12.10	3,311
May 16	11.35	4,068
May 17	10.50	4,201
May 18	6.20	2,217
Total	57.45	19,423
May 20	11.40	4,024
May 21	10.15	4,032
May 22	14.30	4,513
May 23	12.05	4,850
May 24	11.50	4,866
May 25	12.50	4,508
Total	73.10	26,793

PERSONAL.

Col. Geo. W. Goethals sailed for New York on Tuesday, May 28, on the United Fruit Company's steamer *Carrillo*. He will be absent from the Isthmus about one month.

Lieut-Col. Wm. L. Sibert sails for the United States, on the *Ancon*, on Saturday, June 1, to attend the graduation of his son at West Point.

Mr. Joseph Bucklin Bishop, accompanied by his wife and son, will sail for New York, on the *Ancon*, on Saturday, June 1, on his annual leave of absence. Miss Bishop will sail for San Francisco on the *City of Para*, on May 30.

Col. C. A. Devol, who went to Washington as representative of the Canal Zone Red Cross at the ninth International Red Cross Conference held there on May 7-17, returned to the Isthmus on the steamship *Allianca*, on May 27.

Among others who will sail for the United States on the *Ancon*, leaving Saturday, June 1, are Maj. J. P. Jervey and family of Gatun, and Lieut. Frederick Mears and family of Colon.

Capt. Courtland Nixon, accompanied by Mrs. Nixon, returned on Thursday, May 23, from a week's leave of absence, spent in Costa Rica.

On account of the steps on west side of Culebra Cut, about 300 feet north of the suspension bridge at Empire, being destroyed by a slide, new steps have been erected just north of the east end of the bridge. The sides of the channel are practically vertical at this point, and the new stairs are in three flights, with a total of 144 eight-inch steps.

LABOR FORCE AND QUARTERS IN APRIL.

On April 24 there were 36,136 employes actually at work on the Canal and Panama railroad, and of that number 29,354 were Canal employes. The gold force on the Canal work, composed almost entirely of white Americans, was 4,276. The total force on April 26, 1911, was 35,259, and the Canal force, 28,132. The force report for April 24, 1912, follows:

DEPARTMENT.	SILVER EMPLOYES.*													Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Cons't'ct'n and Eng'r'ng	4,312	12	14	226	759	2,879	3,947	498	120	525	4,758	2,569	†242	20,861	3,186	24,047
Civil Administration	194	..	..	2	4	25	......	......	...	.....	......	13	....	238	366	604
Sanitation	693	..	..	3	3	6	......	......	1	1	4	281	‡6	998	356	1,354
Quartermaster's	901	..	1	103	160	140	77	8	29	.....	36	765	§15	2,235	195	2,431
Subsistence	730	..	..	2	.....	2	......	......	...	.....	......	......	....	734	52	786
Disbursements	7	..	.	....	.....	......	......	......	...	.....	......	......	....	7	24	31
Examinat'n of Accounts	5	..	..	....	.. .	......	......	......	...	.....	......	......	....	5	96	101
Total	6,842	12	15	336	926	3,052	4,024	505	150	526	4,798	3,628	263	25,078	4,276	29,354
Month previous	6 824	12	15	348	949	3,143	4,135	637	163	602	5,108	3,747	275	25 958	4,379	30,337

Panama railroad force, 4,847; Panama railroad relocation force, 540; Panama railroad commissary force, 1,395 Total, 6,782. I. C. C. force 9,354 Grand total, 36 136

*All wages specified are in gold. †Includes 2 at 5 cents. ‡Includes 1 at 5 cents. §Includes 6 at 5 cents.

The force report for the Department of Construction and Engineering on April 24, follows:

DIVISION	SILVER EMPLOYES.*													Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents	32 cents.	25 cents.	20 cents	16 cents.	20 cents.	16 cents.	20 cents.	cents.	13 cents.	10 cents.	7 cents.			
Chief Engineer	162	..	..	22	69	251	120	52	...	12	624	126	8	1,446	283	1,729
Mechanical	173	5	2	23	60	468	60	2	...	.....	786	18	8	1,605	680	2,285
Atlantic	1,703	6	10	83	286	738	1 054	167	...	67	870	290	34	5,308	733	6,041
Central	1,124	1	..	33	125	462	1,863	59	98	446	844	1,922	147	7,124	786	7,910
Pacific	1,150	..	2	65	219	960	850	218	22	.....	1,634	213	†45	5,378	704	6 082
Total	4,312	12	14	226	759	2,879	3,947	498	120	525	4,758	2,569	242	20,861	3,186	24,047
Month previous	4,341	12	14	233	762	2 951	4 068	610	128	601	5,076	2,693	261	21,753	3,237	24,990

*All wages specified are in gold. †Includes 2 at 5 cents.

QUARTERS.

On May 1, there were 24,831 occupants of Commission quarters. Of these 9,393 were white Americans ,of whom 5,347 were men, 2,041 were women, and 1,915 were children. There were 6,088 Europeans of the laborer class, of whom 5,433 were men, 1,042 women, and 391 children. There were 9,440 West Indian negroes, of whom 7,035 were men, 1,042 women, and 1,363 children.

APPROACH TO GATUN LOCKS.

Walls Specially Designed to Minimize Action of Waves from Gatun Lake.

The general designs for the three sets of locks for the Canal are the same, but variations occur in the construction of the wing and approach walls in adaptation to local geographical conditions. The upper wing walls and the intakes for the culverts in the side walls at Gatun Locks were designed to minimize the effect of wave action in the approach chambers.

The Locks are at the lower end of Gatun Lake, where waves, sweeping over an unobstructed distance of about five miles, would be liable to funnel in the narrowing approach and interfere with the operation of the miter gates. To dissipate the waves, the approach was widened by the construction of offset walls, on each side of the approach, forming large recesses between the wing walls and the backfill. The wing walls, instead of being continuous monoliths, as proposed for Pedro Miguel and Miraflores Locks, where the backfill is to lie against them, are, at Gatun, a series of piers and arches to support the tracks for towing locomotives. The under surfaces of the arches being higher than the proposed surface of the lake, the stretch from the center wall to the retaining wall on either side is a continuous chamber, and such obstruction as the piers cause is but a further means of reducing the waves.

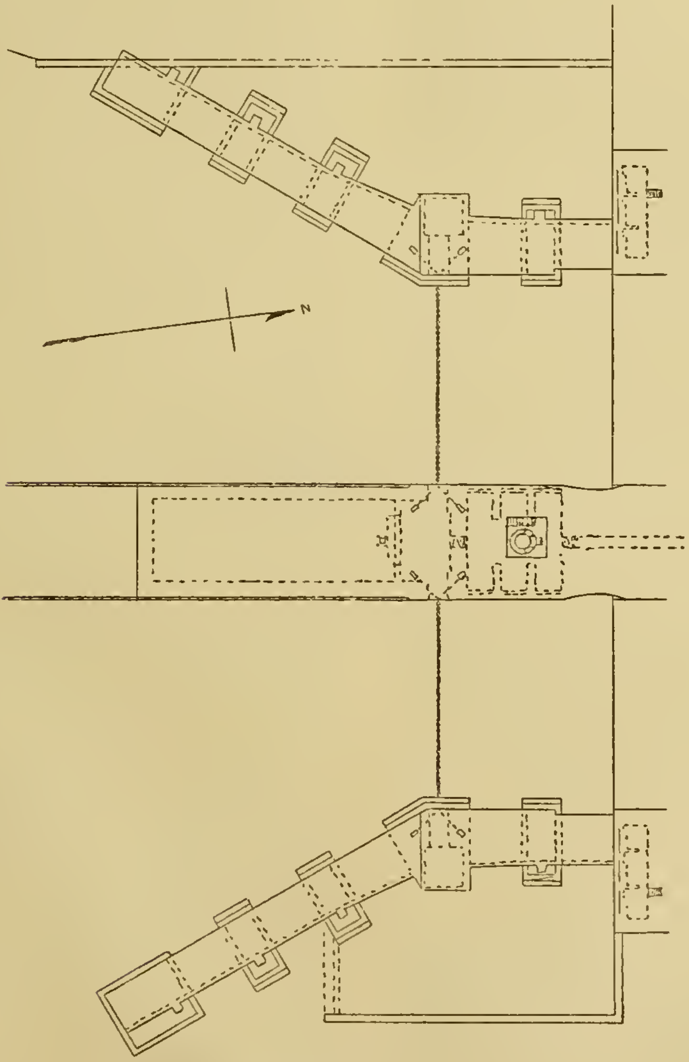


FIG. 1—PLAN OF THE UPPER APPROACH AT GATUN LOCKS.

The plan of center approach, wing and retaining walls is shown in Figure 1, accompanying this article, and the elevation of a wing wall is shown in Figure 2. The offset wall, which is perpendicular to the axis of the Locks, is carried out 50 feet from the side wall, on a line with the sill for the floating caisson dam. Its top is level with the top of the side wall at that point. From the outer end, the portion parallel to the channel dips at an angle of 30 degrees with the horizontal, and slopes to the ground. The backfill is graded even with it. These retaining walls are concrete, gravity section type, four feet wide at the top, and increasing in thickness toward the bottom. The thickness at base varies according to the elevation of the rock on which the walls are founded.

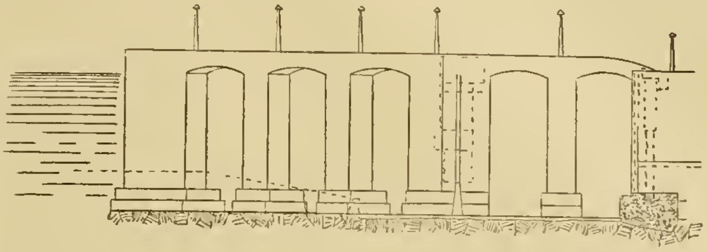


FIG. 2—ELEVATION OF WING WALL AT UPPER, OR SOUTH END, GATUN LOCKS.

The locations of the intakes for the culverts are indicated in Figure 1. Each intake, is divided at the entrance into three passages, eight feet wide by 18 feet high, by concrete partition walls. Intakes for center wall culverts are identical for all locks. For the side wall culverts they are similarly located with reference to the culverts proper, but at Pedro Miguel and Miraflores the water is to flow in through vaulted recesses in the side walls, opening toward the approach chamber.

That portion of an upper wing wall at Gatun which is parallel to the axis of the Locks contains two arches, each 30 feet long, supported on piers, the foundations for which rest on rock at 13 feet above sealevel. The piers are of solid concrete. That nearest the intake to the side wall culvert is 21 feet long by 46 feet wide in base section. The second, at which the flare of the wing wall begins, is an irregular pentagon in plan section, with its greatest dimensions approximately 25 by 48 feet. The flaring portion of the wall extends 195 feet, in three arches on piers 35 feet apart. Two of these piers are 21 feet long by 45 feet wide at foundation, vertical on the face toward the channel, and stepped-in at the rear, by six 18-inch steps at intervals of six feet, to a width of 21 feet three inches at the top. The pier at the outer end of the flare wall is larger than its intermediate supports, being 33 by 37 feet in foundation section, but similar in other features of construction. At the top of each pier, on the rear side, is a concrete buttress to support a lamp post.

The piers proper rest on concrete bases at elevation 35 feet above sealevel, and the springing line of the arches is 52 feet above, or at 87 feet, the proposed highest level of the surface of Gatun Lake. The arches are built on a curvature of 30.125 feet radius. The thickness from top to soffit line is 12 feet at the springing line and eight feet at the crown, and the width is 21 feet three inches. The wall will support a rack, and a return track for towing locomotives, of 5-foot gage. A description of the arches for connecting the lock walls with the guide and flare walls at the lower end of the Locks was published in THE CANAL RECORD of November 29, 1911.

Sailing of the Ancon.

The sailing date for the steamship *Ancon* has been set for June 1, at 3 p. m., from pier No. 11, Cristobal, C. Z.

LOST—D. A. R. official recognition pin, national number, 86,949, engraved on back. Please return to Edgar Clarke Soule, Empire, C. Z.

SOCIAL LIFE OF THE ZONE.

Women's Clubs Raise Fund for Education of Blind Boy—Other Club Notes.

At a meeting of the executive board of the Canal Zone Federation of Women's Clubs held at Cristobal on May 18, it was reported that the fund pledged by the Federation in January for the education of a native blind boy had reached the sum of $382.45. Three hundred dollars of this money will pay for one year's schooling at the Perkins Institute for the Blind in Boston, Mass., and the surplus will be used for the purchase of the school outfit and other incidental expenses. The money has been raised by the federated clubs, assisted by 24 outside organizations, including church guilds, societies and auxiliaries, Sunday schools, fraternal societies, one club of little girls, and individual subscriptions. The largest subscription was given by the Cristobal Woman's Club, and the next largest by the Gatun Woman's Club. The Federation treasurer reported that a new supply of Federation pins had been received. These pins may be secured by application to Mrs. J. H. Westberg, Empire. The librarian and custodian reported that the federation pictures are now on exhibit at the Empire school. The exhibit is being used daily in the class work.

Unless called for a special conference, there will be no meeting of the executive board until October. Matters of business relating to the federation may be referred to a committee composed of the president, the recording secretary and the treasurer.

The first meeting of the new executive board of the Cristobal Woman's Club was held at the clubhouse on May 15. It is the purpose of the new administration to continue the policy of the club on the same lines that have been followed hitherto so successfully in the organization. The free health lecture courses will be continued as a prominent feature of the work. The program committee expects to have the year book in the hands of the printer by July 1. An especially interesting program is being drawn up by the chairman of the art and literature department.

The Ancon Study Club has completed its second study course, the subject of which was Greek and Roman life, and the history of the Greek and Italian Renaissance, with the national development of the fine arts under its influence. The work was concluded by a review of seventeenth, eighteenth, and nineteenth century painting and sculpture in France, England, and Germany, and the development of a national art in America. The next course will be the operas currently presented in musical centers, including French, German, and Italian compositions. The first study in this series will be at the meeting on May 31, at the home of Mrs. Mark White.

Social Activities at Las Cascadas.

The social activities in the village of Las Caseadas center mainly around the fraternal societies, the dancing, card, and social clubs having recently disbanded. The orders and societies holding regular meetings in the lodge hall are the Masonic club, with its different degrees of orders, which meets every Saturday evening, the Knights of Pythias, the Uniformed Rank of the Knights of Pythias, which occupies the hall every Monday evening, and the Independent Order of Red Men. The Brotherhood of Locomotive Engineers meets on the second Sunday in each month, and the woman's auxiliary to the order, holds semimonthly meetings on the second and fourth Friday afternoons. The order of the Pythian Sisters meets on the second and fourth Wednesday evenings in each month. This order held a card party in April and is arranging to hold a similar entertainment in May. The regimental band plays in the band stand on Mondays, Wednesdays, and Fridays at 7.30 p. m.

Church Notes.

Beginning with the meeting on June 6, the Woman's Foreign Missionary Society of the Methodist Episcopal Church, Panama, will take up a course of study on South America. The subject will be divided under different heads, and the history, government, industries, people, customs, and religions will be discussed at each meeting. Mrs. Harry Compton, president of the society, will be leader.

The class meetings of the Fidelity chapter of the Empire Union Sunday school are held on the second and fourth Tuesdays in each month. Since the removal from Empire of Mrs. Stephen Witt, the class leader is Mrs. Van Hardeveldt.

On Sunday, May 19, the newly erected church building for the Baptist congregation in New Gatun was dedicated. There were three services: At 10 a. m., when the Rev. Mr. Wise, superintendent of the work of the Southern Baptist Convention, preached; at 3 p. m., with an address by the Rev. A. A. Nellis, Commission chaplain at Empire and Culebra, and at 7.30, when the Rev. Stephen Witt, pastor of the mission, preached.

The Foreign Missionary Society of the Methodist Episcopal Church, with headquarters in Panama, has taken out a 15-year lease with the Panama Railroad Company for a lot in the Guachapali district, Panama, for the purpose of erecting thereon a church building. The lot is located south of Caledonia bridge, in Block 5, facing 12th of October street, and measures 35 by 100 feet. It is understood that a frame structure will be erected by the society and that provision will be made in it for a meeting house, or mission house, and a school.

The Woman's Altar Guild of St. Luke's Hospital Chapel, Ancon, will hold its next meeting at the Hotel Tivoli on Tuesday, June 4, at 9.30 a. m.

The Rev. Father Dyer has completed his missions at Christ Church, Colon, at St. Paul's Church, Panama, and at St. Mark's Church, Culebra. He will be at St. Andrew's Church, Empire, for the week ending June 1, and will sail for New Orleans on June 6.

At the recent entertainment given at the nurses' home at Colon Hospital by the Woman's Altar Guild of Christ Church, the receipts were $150. The money will be used for the guild expenses and for the work of the church.

Sale at Public Auction.

Office of Chief Quartermaster,
Culebra, C. Z., May 24, 1912.

There will be sold at public auction, by the district quartermaster at Gatun, Canal Zone, at the Y. M. C. A. clubhouse, at 2 p. m., Saturday, June 8, 1912, to the highest bidder for cash the following Isthmian Canal Commission property:

Two (2) billiard tables.

The Government reserves the right to accept or reject any or all bids.

For further information apply to the District Quartermaster, Gatun, Canal Zone.

R. E. Wood, *Acting Chief Quartermaster.*

Found—A leather satchel, at Ancon Hospital admitting office. Inquire there.

OFFICIAL CIRCULARS.

Acting Chairman and Chief Engineer.

Culebra, C. Z., May 27, 1912.

Circular No. 445:

During my absence from the Isthmus, Col. H. F. Hodges will be in charge of the work as Acting Chairman and Chief Engineer, effective May 28, 1912.

Geo. W. Goethals,
Chairman and Chief Engineer.

Acting Head of Department of Civil Administration.

Culebra, C. Z., May 27, 1912.

Circular No. 446:

Mr. H. H. Rousseau will have charge of the Department of Civil Administration during my absence from the Isthmus and until the return from leave of Mr. M. H. Thatcher, effective May 28, 1912.

Geo. W. Goethals,
Chairman and Chief Engineer.

Purchase of Commissary Coupon Books for Cash.

Culebra, C. Z., May 27, 1912.

Circular No. 256-e:

Effective June 1, 1912, gold employes of the Commission and Panama Railroad Company will, in addition to securing such books by the "deduction method," as heretofore, be permitted to purchase commissary coupon books for cash at the following points and at the times stated:

Colon—During regular office hours on any day from the cashier of the Panama Railroad Company.

Cristobal—During regular office hours on any day from the commissary cashier in building No. 2.

Empire—On Mondays, Wednesdays and Fridays during the hours in which the commissary is open for business.

Culebra—On Tuesdays, Thursdays, and Saturdays during the hours in which the commissary is open for business.

Until further notice, presentation of employe's check, either by himself, or by some member of his family, will be the only identification required.

This new system of enabling employes to secure commissary coupon books for cash is being instituted at the points named for trial, upon the termination of which, if it appears warranted, the system will be extended to other points on the Isthmus.

Geo. W. Goethals,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Concessions to the Fourth of July Celebration.

Culebra, C. Z., May 22, 1912.

Heads of Departments and Divisions:

I beg to advise that I have approved the following in connection with the 1912 Fourth of July celebration for which arrangements are now under way:

1. Authority has been granted to use "penalty" envelopes in connection with official business of the celebration.

2. Work performed by any department or division of the Commission or Panama Railroad Company upon request of the committee in charge of the celebration will carry the same surcharge as work done by one department or division for another.

3. Floating equipment of the Commission and Panama Railroad Company may be used in connection with any program outlined for the celebration, with the understanding that such use will be in accordance with rules and regulations prescribed by the Board of Local Inspectors of the Canal Zone.

4. Subscriptions for the celebration may be made by employes by the "Deduction method," *i. e.*, in a manner similar to that in which hotel and commissary coupon books are secured, any arrangements necessary to give this effect to be approved by the Examiner of Accounts, and deduction of subscriptions from pay due to be made only upon written request of the employe subscribing. Subscriptions will, of course, also be made by cash payment, as preferred by employes.

Geo. W. Goethals,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Surplus Equipment.

Culebra, C. Z., May 27, 1912.

Circular No. 323-c:

When equipment becomes surplus and it is desired to dispose of the same, Form C. E. 187-2 should be submitted giving full description of equipment, in order that same may be readily identified. No disposition will be made of such equipment until approved Form C. E. 187-2 has been returned to accountable official.

Geo. W. Goethals,
Chairman and Chief Engineer.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule of moving picture entertainments, week of June 3 to 8 is, as follows: Monday, Empire; Tuesday, Corozal; Wednesday, Culebra; Thursday, Gatun; Friday, Cristobal; Saturday, Gatun.

CULEBRA.

Miss MacLaren, the reader, will give an entertainment at the clubhouse on June 1, beginning at 8.15 o'clock.

The Culebra glee club will give a concert on Tuesday, June 4.

The volleyball teams play every Tuesday and Friday from 5.10 to 6 p. m.

Culebra took three straight in bowling from Empire; on Saturday evening. Scores:

Culebra.				Empire.			
Mengel.....	98	105	104	Penny......	99	88	95
Grier.......	87	88	86	Giavelli....	83	77	76
Cornthwaite	97	90	93	Grund.....	85	81	90
Palmer.....	94	103	94	Danielson...	90	96	75
Silver......	89	99	102	Rodeghiero.	90	89	99
Total....	465	485	479		447	431	435

Gorgona bowls at Culebra, Saturday, June 1, and Cristobal will play billiards at Culebra on the same date.

EMPIRE.

Empire took two out of three bowling games from Culebra on Saturday, May 25. The third game was a tie game, with Culebra winning the roll off. Scores:

Empire.				Culebra.			
Sawtelle....	88	100	92	Crain......	74		
Nelson.....	89	88	83	Brown.....	91	85	89
King.......	96	86	88	Sterns......	81	94	80
L. Giavelli..	97	91	82	Hill........	92	78	97
Gustavson..	83	101	90	Case.......	90	81	75
				Lowande...		90	94
Total....	453	469	435		428	428	435

On Saturday, June 1, Gatun will bowl at Empire.

GORGONA.

The following games were rolled in the duckpin tournament between Gorgona and Cristobal on Saturday night, May 25:

Cristobal.				Gorgona.			
Herrington..	90	86	85	Seebt......	81	77	118
Whittles....	90	77	110	Robertson..	87	93	78
Collins.....	73	86	86	Moyer.....	77	79	
Bullard.....	94	82	83	Dunlop.....	82	94	94
Herring....	88	85	99	Haggerty...	100	82	91
				Denst......			80
Total....	435	416	463		427	425	461

The "Every day in the year" club is studying "Christianity and the social crisis," by Rauschenbush, every Friday night at 7.15 o'clock in the secretary's room. All men are invited to join the class which is engaged in studying the social ills of the United States.

At the bigpin bowling meeting held in the bowling alley, Wednesday night, at 7.30 p. m., May 22, Messrs. Roper, Sexton, and Halderman were elected to arrange a bigpin bowling tournament.

At the duckpin bowling meeting, Thursday, May 23, Messrs. Anderson and Haggerty were elected captains of the home and traveling duckpin teams.

Miss Gay Zenola McLaren will give her recital "Bought and paid for" in the hall on Friday night, May 31, at 7.45 p. m. Members are admitted free; general admission is 50 cents. Children will not be permitted to sit in the first six rows of chairs unless accompanied by their parents.

The next sunset song service will be held on June 2, at 7 p. m. Old home songs will be sung. All are invited to attend. Admission free.

GATUN.

Saturday night, May 25, the Gatun duckpin bowling team won three games from Camp Elliott on the local alleys. Scores:

Camp Elliott.				Gatun.			
McAber....	74	78	73	Swallow....	90	95	98
Teeters.....	80	78	79	Dalton.....	80	77	
Kreibel.....	84	82	87	Hodges.....			90
Rucker.....	81	81	78	Durand....	84	89	106
Wrigelt....	81	77	107	Vierbuchen.	100	84	92
				Huttlemaier	87	104	125
Total....	400	396	424		441	449	511

Huttlemaier bowled the highest score of the tournament, 125.

Gatun will bowl Empire on Saturday night, June 1.

Another order of gymnasium shoes arrived last week.

Culebra and Gatun broke even in billiards on Saturday night, May 25. Scores:

Gatun.		Culebra.	
Wurster............	100	Tragsdorf..........	86
Townsley..	85	A. Conlon..........	100

Monday, May 27, a German orchestra will give a free concert at Gatun.

Pictures of the following activities and teams of the Gatun clubhouse were taken recently, and orders for same may be given to the secretary: Spanish class; checker club; barber shop; pool room; reading room; bowling team; pool and billiard team; moving picture audience; boys' and mens' gymnasium classes, and noon hour gathering of members on the front steps.

CRISTOBAL.

On Saturday evening, May 25, the Cristobal duckpin bowling team took three straight games from the Gorgona team on the local alleys. The Camp Elliott duckpin bowling team will play the local team on the Cristobal alleys, Saturday evening, June 1.

The session of the debating club scheduled for May 29, has been postponed until Wednesday evening, June 5, when the topic for discussion will be "Resolved, that the law of the sea (women and children first) is wrong." All men are invited to attend.

On Tuesday evening, June 4, Miss Gay Zenola McLaren will hold her recital.

On Thursday evening, June 6, a concert will be held inside the clubhouse by the Tenth Regiment Band of Camp Otis. Admission will be free, and the public is invited.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon, during the two weeks ending May 25:

Lord Roberts, May 12, from New York, with 131,924 bags cement, for Atlantic and Pacific Divisions.

Prinz Joachim, May 13, from New York, with 63 bundles steel bars 97 pieces steel bars, for stock.

Workman, May 15, from Liverpool, with one case plate springs, for Pacific Division.

Almirante, May 16, from New York, with 11,200 pieces hollow tile, for Panama Railroad Company; 144 cases castings, for Superintendent of Erection; 12 cases wire, 53 bundles steel pipe, 2,208 pieces steel pipe, 200 kegs boat spikes, 300 cases linseed oil, 5 cases unions, for stock.

Atenas, May 16, from New Orleans, with 71 bundles castings, 72 pieces castings, 29,808 pieces lumber, for Mechanical Division; 20 cases paint, 60 packages car parts, 128 sacks feed, 128 pieces piling, 1,090 pieces lumber, for stock; 6 cases machinery, for Panama Railroad Company.

Belasco, May 16, from Baltimore, with 126,397 pieces vitrified tile, for Pacific Division; 5,308 pieces vitrified tile, for Division of Fortifications; 601 pieces plates and girders, 11 bundles structural material, 41 cases structural material, 270 kegs bolts and rivets, 215 pieces steel rail, 673 bundles track material, 24 kegs track material, for Panama Railroad Company; 87 cases valve machine parts, 30 bundles valve machine parts, 28 crates valve machine parts, 395 crates rack castings, 10 pieces rack castings, 684 pieces structural material, 35 cases structural material, 149 bundles structural material, for Superintendent of Erection; 283 kegs bolts and nuts, 254 kegs paint, for stock.

Advance, May 16, from New York, with six crates trucks, for Pacific Division; 12 barrels batteries, 13 barrels silica, for Mechanical Division; 56 packages crane parts, 443 packages conduit, 20 cases bumping posts, for Panama Railroad Company; 64 cases drugs and sundries, for Sanitary Department; nine bales wool waste, eight cases wire, 30 bundles steel bars, 20 cases tools, 12 cases handles, 16 cases lamps, 200 kegs paint, 488 bundles iron pipe, 769 pieces iron pipe, 116 pieces steel rods, 150 cases caustic soda, 13 cases hingehasps, for stock; and a miscellaneous cargo, the whole consisting of 2,530 packages, weighing 240 tons.

Flora, May 17, from New York and Bridgeton, with 18,995 bags cement, for Atlantic and Pacific Divisions; 15,000 cases dynamite, for stock.

Carrillo, May 18, from New York, with 31 bundles pipe, for Atlantic Division; 129 pieces oak lumber, for Mechanical Division; 156 bundles electrical material, 133 cases electrical material, for Superintendent of Erection; 233 kegs nuts and washers, 20 cases putty, 23 cases pipe-fittings, 13 cases packing, 36 drums calcium carbide, 14 cases hardware, 53 pieces pipe, 1,761 bundles pipe, for stock.

Navajo, May 19, from San Francisco, with 862 bales hay, 658 pieces lumber, 450 cases dynamite, for stock.

Tagus, May 19, from New York, with 50 bundles galvanized iron, for stock; 486 pieces steel ties, for superintendent of erection.

Prinz Eitel Friederich, May 21, from New York, with one case electrical material, for stock.

Santa Marta, May 22, from New York, with 147 pieces steel plates, for Mechanical Division; five cases brass rods, for stock; 84 bundles electrical material, for superintendent of erection.

Parismina, May 23, from New Orleans, with 10 crates water closets, 98 sacks feed, 50 crates handles, 10 reels wire rope, 100 cases lard oil, 250 cases soap and polish, 2,127 pieces lumber, for stock; 25 head cows, for Sanitary Department; 53 bundles castings, 21,790 pieces lumber, for Mechanical Division.

City of Para, May 23, from San Francisco, with six bales dredging sleeves, for Atlantic Divison.

Chelston, May 23, from New York, with 119,318 bags cement, for Atlantic and Pacific Divisions; 30 cases—two locomotive cranes, for superintendent of erection; 95 drums gasoline, for stock.

Ancon, May 24, from New York, with 121,943 bags cement, for Atlantic and Pacific Divisons; 30 bales cotton waste, four cases hardware, for stock.

Panama, May 21, from New York, with 75 cases springs, for Atlantic Division; 114 pieces castings, for Pacific Division; 82 pieces lumber, 17 cases incandescent lamps, for Mechanical Division; 9,500 pieces hollow tile, 560 rolls roofing felt, for Panama Railroad Company; 460 cases glassware, eight drums carbon dioxide, 10 cases drugs and sundries, for Sanitary Department; 50 cases paint, 19 cases envelopes, 96 barrels cement, 58 cases steamshovel parts, 22 cases paper, 17 barrels whiting, 11 cases bolts, 15 barrels glassware, 32 reels wire rope, 40 pieces steel channels, 182 bundles galvanized iron, 70 bundles tag board, 390 bundles pipe, 70 rolls wire cloth, 800 cases linseed oil, 250 cases paste, 90 cases borax and acid, 29 cases wrenches, 11 cases files, 14 cases hardware, for stock; and a miscellaneous cargo, the whole consisting of 12,981 packages, weighing 385 tons.

Family Quarters.

Applications for married quarters on file on May 1 were, as follows:

DISTRICT.	List No 1.	List No. 2.
Ancon..........................	9 (2)	66 (17)
Ancon Hospital..................	1	3
Balboa..........................	1	33 (7)
Bas Obispo......................	....	39
Corozal.........................	1	62 (14)
Cristobal.......................	1	143 (1)
Culebra.........................	7 (1)	48 (2)
Gatun...........................	....	100 (24)
Gorgona.........................	4	81 (31)
Las Cascadas....................	....	30
Pedro Miguel....................	3 (1)	48 (12)
Porto Bello.....................	....	10 (8)
Toro Point......................	1 (1)	7 (3)
Totals..........................	28 (5)	750(147)

NOTE—The figures in parentheses show the number of applicants already occupying regular or nonhousekeeping family quarters at stations other than those at which applications are filed.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, May 25, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia	Alhajuela	Gamboa	Bohio	Gatun Lake
Sun., May 19..	131.4	96.5	49.0	19.5	19.2
Mon., May 20..	127.7	94.3	48.4	19.6	19.6
Tue., May 21..	138.0	101.0	53.6	20.6	19.9
Wed., May 22..	131.4	98.0	53.6	21.0	20.9
Thur., May 23.	127.8	94.4	46.9	21.2	21.2
Fri., May 24...	137.1	100.4	53.5	23.0	21.9
Sat., May 25...	131.7	96.6	52.8	23.5	23.0
Height of low water to the nearest foot..	125.0	91.0	44.0		

Misdirected Letters.

ANCON, C. Z., May 22, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts and may be secured upon request of the addressee:

Ahrens, Harry
Bynoe, Reynold
Carter, Milton
Chambers, F. H.
Criste, Matthew F.
Croes, Mrs. L. Z.
Davis, W. S.
DePlanty, Clarence G.
Devine, Wm. N.
Elder, I. Burke
Evans, Joseph A.
Evans, Mr. & Mrs. L. C.
Flynn, Peter G.
Gardner, Harold B.
Gaskins, W.
Grissom, J. T.
Harrell, Lieut. William F.
Hernurger, Chas. F.
Kindervater, W. H.
Landry, W. C.
Levee, L. C.
Lewis, David
McGhee Daniel
McPherson, Gilbert
Menninger, Clifford
Murphy, Robt. E.
Petgrave, J. W.
Plankenhorn, Mrs. Geo.
Sawyer, J. M.
Strainge, F. L.
Stub, John
Taylor, S. J.
Wedderburn, A. C.
White, W. E.
Woodbrough, Mrs. Arthur

The following ships arrived at, or departed from, the port of Balboa during the week ending May 25:

Arrivals—May 21, *Pachitea*, from Callao; May 23, *City of Para*, from San Francisco; May 22, *Palena*, from Valparaiso; May 25, *Barracouta*, from San Francisco.

Departures—May 19, *San Juan*, to San Francisco, May 20, *Mexico*, to Valparaiso; May 20, *Ecuador*, to Guayaquil; May 20, *Santa Maria*, to Port Harford; May 24, *Peru*, to Guayaquil.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning May 29, 1912.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Plate, per pound	9
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds,) per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	24
Venison (Imported), Stew, per pound	12
Forequarter (not under 6½ pounds), per pound	16
Rack (not under 5½ pounds), per pound	27
Saddle (not under 7½ lbs.), per pound	27
Leg (not under 9 pounds), per pound	27
Chops, per pound	28
Cutlets, per pound	28

MISCELLANEOUS.	
Caviar, Russian in ¼-lb. jars, jar	89
Livers—Beef, per pound	8½
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	19
Sweetbreads—Beef, per pound	25
Eggs, fresh, dozen	26
one-half dozen only	14
Bluefish, per pound	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	14
Fluke, fresh, per pound	10
Oysters, 1 quart, per box	40
Shads, fresh, each	90

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 5½ pounds each	1.10
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each ††60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.25
Hens, milk fed, for roasting, about 3 pounds each	50
Broilers, milk fed, each	70
Broilers, corn fed, each	60
Turkeys, per pound	23
Squabs, each	35
Capons, each	2.10
Ducks, teal, per pair	50
Ducks, Blackhead, pair	60
Partridges, pair	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30

CURED AND PICKLED MEATS.	*Price.*
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Ham—Sugar cured, Half, for boiling, per pound.	21
Boiled, per pound	28
Hocks, per pound	?8
Bacon—Breakfast, whole piece, per pound	23
sliced, per pound	24
Pork, salt, family, per pound	13
Ox tongues, each	1.00
Pigs'feet, per pound	9
Tongues, per pound	18

DAIRY PRODUCTS.	
Butter—Creamery, special, per pound	38
Sheffield Farms, extra, fancy per lb.	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	*22
Swiss, per pound	28
Edam, each	1.00
Edam, in tins, per tin	26
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**20
Butter, bottle	**15
Fer-mil-lac, bottle	**20
Ice cream, quart	?25
½-gallon	?50

VEGETABLES AND FRUITS.	
Asparagus, per bunch	10
Beets, per pound	3
Celery, per head	10
Cabbage, per pound	5
Cucumbers, per pound	*10
Carrots, per pound	†5
Cauliflower, per pound	8
Egg plant, per pound	10
Lettuce, per pound	15
Onions, per pound	*4
Potatoes, white, per pound	3
sweet, per pound	2
Plant, oyster, per pound	14
Parsnips, per pound	*6
Rhubarb, per pound	6
Squash, per pound	5
Turnips, per pound	3
Tomatoes, per pound	†11
Yams, per pound	3
Apples, per pound	6
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, California navel, per dozen	30
Oranges, Jamaica, per dozen	12
Pinepples, each	12½

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

††Fowls weigh each about as follows: 3, 3½, 4, 4½ and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight, is supplied and refund note sent for difference.

?Sold only from commissaries; no orders taken for delivery.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 5, 1912. (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
May 30	......	3.16	9.18	3.24	9.41
May 31	......	3.58	10.02	4.05	10.25
June 1	......	4.37	10.43	4.44	11.04
June 2	......	5.15	11.25	5.22	11.45
			P.M.		
June 3	......	5.55	12.05	5.59	......
June 4	12.24	6.30	12.45	6.37	......
June 5	1.03	7.10	1.27	7.15	......

Rainfall from May 1 to 25, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	7.06	12	10.60
Balboa	7.00	12	9.43
*Miraflores	3.60	12	7.51
Pedro Miguel	3.30	12	6.54
Rio Grande	2.48	8	5.93
Central Section—			
Culebra	3.19	8	7.10
*Camacho	2.00	8	4.58
Empire	1.65	8	4.96
Gamboa	1.62	9	5.87
*Juan Mina	1.89	15	8.79
Alhajuela	2.89	14	11.34
*El Vigia	2.48	24	10.73
*Gorgona	3.40	9	6.13
Frijoles	1.84	24	7.85
*Monte Lirio	1.40	18	6.84
Atlantic Section—			
Gatun	2.39	18	10.18
*Brazos Brook	1.93	24	8.33
Colon	3.35	24	9.10
Porto Bello	6.41	21	†11.33

*Standard rain gage—readings at 5 p. m., daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., May 23.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steamship Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line.

NEW YORK TO CRISTOBAL.

Colon	P. R. R.	Monday	May	27
Advance	P. R. R.	Monday	June	3
Panama	P. R. R.	Saturday	June	8
Allianca	P. R. R.	Friday	June	14
Colon	P. R. R.	Friday	June	21
Advance	P. R. R.	Thursday	June	27
Panama	P. R. R.	Wednesday	July	3
Allianca	P. R. R.	Tuesday	July	9
Colon	P. R. R.	Monday	July	15
Advance	P. R. R.	Monday	July	22
Panama	P. R. R.	Saturday	July	27
Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21

CRISTOBAL TO NEW YORK.

Allianca	P. R. R.	Sunday	June	2
Colon	P. R. R.	Sunday	June	9
Advance	P. R. R.	Saturday	June	15
Panama	P. R. R.	Friday	June	21
Allianca	P. R. R.	Thursday	June	27
Colon	P. R. R.	Wednesday	July	3
Advance	P. R. R.	Tuesday	July	9
Panama	P. R. R.	Monday	July	15
Allianca	P. R. R.	Sunday	July	21
Colon	P. R. R.	Sunday	July	28
Advance	P. R. R.	Saturday	Aug.	3
Panama	P. R. R.	Friday	Aug.	9
Allianca	P. R. R.	Thursday	Aug.	15
Colon	P. R. R.	Wednesday	Aug.	21

NEW YORK TO COLON.

Metapan	U. F. C.	Wednesday	May	22
Oruba	R. M.	Saturday	May	25
Prinz Sigismund	H.-A.	Saturday	May	25
Tivives	U. F. C.	Saturday	May	25
Zacapa	U. F. C.	Wednesday	May	29
Sixaola	U. F. C.	Saturday	June	1
Prinz Joachim	H.-A.	Saturday	June	1
Almirante	U. F. C.	Wednesday	June	5
Thames	R. M.	Saturday	June	8
Carrillo	U. F. C.	Saturday	June	8
Prinz Eitel Friedrich	H.-A.	Saturday	June	8
Prinz August Wilhelm	H.-A.	Saturday	June	15
Turrialba	U.F.C.	Saturday	June	15
Metapan	U. F. C.	Wednesday	June	19
Prinz Sigismund	H.-A.	Saturday	June	22
Trent	R. M.	Saturday	June	22
Tivives	U. F. C.	Saturday	June	22
Zacapa	U. F. C.	Wednesday	June	26
Prinz Joachim	H.-A.	Saturday	June	29
Sixaola	U. F. C.	Saturday	June	29
Prinz Eitel Friedrich	H.-A.	Saturday	July	6

COLON TO NEW YORK.

Santa Marta	U. F. C.	Thursday	May	30
Turrialba	U. F. C.	Tuesday	June	4
Prinz August Wilhelm	H.-A.	Tuesday	June	4
Prinz Sigismund	H.-A.	Monday	June	10
Trent	R. M.	Tuesday	June	11
Tivives	U.F.C.	Tuesday	June	11
Zacapa	U. F. C.	Thursday	June	13
Sixaola	U. F. C.	Tuesday	June	18
Prinz Joachim	H.-A.	Tuesday	June	18
Almirante	U. F. C.	Thursday	June	20
Prinz Eitel Friedrich	H.-A.	Monday	June	24
Magdalena	R. M.	Tuesday	June	25
Carrillo	U. F. C.	Tuesday	June	25
Santa Marta	U. F. C.	Thursday	June	27

NEW ORLEANS TO COLON.

Abangarez	U. F. C.	Saturday	May	25
Heredia	U.F.C.	Wednesday	May	29
Atenas	U.F.C.	Saturday	June	1
Orleanian	U. F. C.	Wednesday	June	5
Parismina	U. F. C.	Saturday	June	8
Cartago	U. F. C.	Wednesday	June	12

COLON TO NEW ORLEANS.

Parismina	U.F.C.	Thursday	May	30
Cartago	U.F.C.	Thursday	May	30
Abangarez	U. F. C.	Thursday	June	6
Heredia	U. F. C.	Thursday	June	6
Atenas	U. F. C.	Thursday	June	13
Orleanian	U. F. C.	Thursday	June	13

P. R. R. steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans via Limon, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays at 2 p. m., and Thursdays at 11 a. m.; for Bocas del Toro, on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JUNE 5, 1912. No. 41.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Assembling Gates for Gatun Spillway.

Material for the Stoney gates and caissons for the Spillway of Gatun Dam is being assembled in the abandoned borrow pit, north of the division offices at Gatun, between the Panama railroad and the Locks. The material is being supplied from the mills of the McClintic-Marshall Construction Company, and a part of the firm's force at Gatun will soon be engaged in the work of assembling, riveting, caulking and testing the gates, which, when ready for installation, will be transferred by the forces of the Commission to the Dam site, and installed. Fourteen gates, weighing approximately 43 tons each, are to be used in the Spillway at Gatun, and eight gates will be used at Miraflores spillway. One caisson will be used at Gatun, and one at Miraflores. Thirty-five per cent of the material for Gatun has arrived on the Isthmus, while none of that for Miraflores is yet at hand. The installation of the gates at Gatun will begin about August 15, 1912, and should be completed December 31, 1912.

Fire and Boat Drills on Vessels in Port.

Test boat and fire drills are now conducted, under the supervision of the Board of Local Inspectors, on vessels that call at the port of Balboa. Since the employment of the regular inspector on January 1 of this year, he has been kept busy seeing that the commercial vessels that carry a Canal Zone certificate, comply with the rules and regulations of the Board concerning the condition of their boilers, and the state and extent of their life-saving appliances. These conditions, having in the main been met, the inspector has been directed to turn his attention to the matter of the proficiency of the crews of visiting vessels in fire and boat drills. In carrying on these drills, it has developed that very few of the crews can handle the apparatus within the time limit set, which, in the case of the fire drill allows one minute as the time to elapse before the water is on, and in case of the boat drill, two minutes as the time to elapse before the boat is in the water. As showing how deficient some of the crews are in this practice, it may be cited that one day recently at a fire drill, it took a crew 22 minutes to get water on. In this instance, there were some mechanical difficulties to be overcome which prevented quick action, but these difficulties might have arisen in the case of an actual fire, hence the value of the tests.

Immigration at Ports of Colon and Cristobal.

The number of persons who landed at Colon and Cristobal from foreign ports during the month of May was 2,603, consisting of 1,209 cabin, and 1,394 steerage passengers. The number of persons who embarked for foreign ports during the same period was 4,278, consisting of 1,949 cabin, and 2,329 steerage passengers. The number of persons who embarked during the month, over those who landed, was 1,675. The persons who arrived "in transit" in May numbered 1,396.

Proposed Change in High School Organization.

To minimize the amount of railroad travel for high school pupils, a change in the organization of the high school has been proposed by the superintendent of schools.

The table below, based on the present attendance in the eighth grade and high school, indicates the possible number of high school pupils of the Canal Zone next year from the various points:

TOWN.	Ninth Grade.	Tenth Grade.	Elev'th Grade.	Twelfth Grade.	Total.
Ancon	10	11	5	......	26
Pedro Miguel Paraiso	4	.....	......	......	4
Culebra	3	2	......	3	8
Empire	14	7	4	......	25
Las Cascadas	......	3	2	1	6
Gorgona	8	4	......	......	12
Gatun	4	2	1	1	8
Cristobal	12	3	2	2	19
Total	55	32	14	7	108

Of these, Ancon, Gorgona, and intermediate points furnish 39 ninth-year, 27 tenth-year, 11 eleventh-year, and four twelfth-year pupils, a total of 81; Gatun and Cristobal, 16 ninth-year, five tenth-year, three eleventh-year, and three twelfth-year pupils, a total of 27.

The plan is to provide two years' work at Gatun, where the first and second-year pupils from Cristobal and Gatun will attend; two years' work at Empire, where the first and second-year pupils from Gorgona, Culebra, and intermediate points will be provided for; and four years' work at Ancon, where all first and second-year pupils, south of Culebra, and all third and fourth-year pupils of the Zone shall be provided for. Two teachers will have charge of the work at Gatun, while the teachers of the consolidated school at Ancon—where an afternoon session is to be had—will have charge of the pupils at Empire in a morning session.

Such an arrangement makes possible the continuance of departmental teaching, which the Division of Schools established in November, 1909, and at the same time reduces the amount of railroad travel by about two-thirds.

It is desired that parents of all children of the present eighth grade, and of the high school, write to the superintendent of schools on or before June 15, expressing their views on the foregoing proposed change.

Tug "Reliance" on Its Way Up the Pacific Coast.

The tug *Reliance*, and its tow of three barges, was at Taltal, Chile, on Sunday, June 2, according to a cablegram received from there on that date. This place is over 500 miles north of Valparaiso. On Sunday, May 26, the tug put in at Coronel, Chile, a port about 268 miles south of Valparaiso, so that in about 7 days' time it covered a distance of about 800 miles. The tug left Colon on February 11, and at the present rate of progress, is due to arrive at Balboa the latter part of this month. Its voyage thus far has been uneventful, and the roughest part of the trip appears to have been in sailing from Colon to Trinidad. The tug's departure was timed so that it would arrive at the Strait of Magellan before the winter in that latitude set in, and, while off the Chilean coast bad weather is often times experienced, it is believed that there is less danger at this season than any other time during the year.

The fact that a great deal more sand is needed from the deposits at Punta Chame than first estimated, because of additional work, is primarily responsible for the trip of the tug around South America. In view of the cessation of operations in the sand pits at Nombre de Dios, a number of barges on the Atlantic side were retired from active service, and became available for use elsewhere. It is believed to be cheaper to bring the barges to Balboa by water, a distance of approximately 10,500 miles, than to take them apart, and ship them by rail across the Isthmus, a distance of 47 miles, and, providing no mishap occurs on the trip, this undoubtedly will be the case. It is proposed to place only two of the barges in the sand service; the third one will be used in connection with the fortification work at the Pacific entrance.

When the sand beds at Punta Chame were first opened, it was estimated that it would be necessary to excavate upward of 1,000,000 cubic yards, practically all of this amount to be used in the construction of the locks at Pedro Miguel and Miraflores. Shortly afterward came the demand upon them from the Atlantic Division, and about 300,000 cubic yards of sand will have been supplied Gatun Locks by the time the work there is finished. In addition, sand has been furnished, when practicable, to various other projects in connection with the Canal work, so that at the present time, the original estimate has been increased about 850,000 cubic yards. Other

NOTES OF PROGRESS.

(Continued.)

projects under consideration will require an additional amount, so that before the demand ceases probably over 2,000,000 cubic yards of sand will have been excavated. The approximate amount of sand delivered from the sand beds at Punta Chame up to and including May 31, 1912, is 1,240,000 cubic yards.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is about 89 per cent completed, 199,101 cubic yards, out of a total of 225,000, having been placed at the close of work on June 1, A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
May 27	120	7.30	1
May 28	70	4.30	2
May 29	104	6.30	1
May 30 (Holiday)	......	......	......
May 31	144	4.00	2
June 1	104	5.30	1
Total	542	28.00	1.4
Previously reported	198,559		
Grand total	199,101		

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending June 1:

DATE.	Hours worked.	Cubic Yards.
May 27	10.20	4,046
May 28	12.40	4,393
May 29	10.50	3,394
May 30...(Holiday)	......	......
May 31	7.50	2,967
June 1	3.20	1,242
Total	45.00	16,042

Central Division Unloaders for May.

The following statement shows the number of trains and lidgerwood cars unloaded by the Central Division during the month of May:

LOCATION.	No. of unloaders.	No. of trains.	No. of cars.
Balboa	4	1,213	24,260
Miraflores	*3	641	12,820
Gamboa	4	1,014	21,294
Total	*11	2,868	58,374

*One unloader worked from 1st to 17th inclusive, only.

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of May follows:

DESTINATION.	Number Cars.	Cubic Yards.
Pacific Division	3,827	63,581
Atlantic Division	8	188
Central Division	27	405
Fortifications	52	1,196
Quartermaster's Department	5	125
Panama railroad	2	50
Lighthouse	2	46
Panamanian Government	2	50
Total	3,925	65,641

Civil Service Examinations.

Examinations will be held at Culebra, Canal Zone, probably on the last Sunday in July, for the position of stenographer and typewriter, Isthmian Canal Service; stenographer and typewriter, Philippine Service; and typewriter, Isthmian Canal Service. Persons interested should request a copy of Form 1424, which contains information in regard to the abovenamed examinations.

Applications will not be received after July 2; this date may be changed if necessary.

Competitors in the abovenamed examinations must bring their own typewriting machines to the examination room; typewriting tables will be furnished.

It is to be noted that in answer to questions as to residence, applicants must show such residence in a State or Territory of the United States, and county thereof, up to the time of filing application.

ISTHMIAN CIVIL SERVICE BOARD.
Culebra, C. Z., June 1, 1912.

CONCRETE WORK IN THE LOCKS.

Over 85 per cent of the concrete for the locks is in place, the amount at the close of work on June 1 being 3,708,712½ cubic yards, out of a total of approximately 4,303,486. A total of 20,703 cubic yards of concrete was laid in the locks during the week ending June 1.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on June 1 being 1,874,469½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending June 1, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
May 27	320	5.32	2	......	......	......	......	386
May 28	334	6.22	2	......	......	......	......	381
May 29	132	2.16	2	......	......	......	......	144
May 30...(Holiday)	......	......	......	......	......	......	......	......
May 31	314	5.14	2	......	......	......	......	323
June 1	158	2.52	2	......	......	......	......	199
*Portable mixers	......	......	......	175	......	......	......	......
Total	1,258	22.16	2	175	......	......	......	1,433
Previously reported	......	......	......	......	......	......	......	1,873,036½
Grand total	......	......	......	......	......	......	......	1,874,469½

The 175 yards shown for the portable mixer were placed on the following days: May 27, 66; May 28, 47; May 29, 12; May 31, 9; June 1, 41. Sixty-two yards of this amount consisted of reinforced concrete.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 95 per cent completed, 848,585 cubic yards, out of a total of 890,750, bucket measurement, having been placed at the close of work on June 1. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
May 27	276	6.75	1	340	28.00	5	......	616
May 28	172	4.50	1	228	22.00	5	......	400
May 29	80	2.00	1	318	30.25	6	......	398
May 30..(Holiday)	......	......	......	......	......	......	......	......
May 31	106	2.75	1	277	25.50	6	......	*447
June 1	128	3.25	1	231	22.50	6	......	359
Total	762	19.25	1	1,394	128.25	5.67	......	2,220
Previously reported	......	......	......	......	......	......	4,438	846,365
Grand total	......	......	......	......	......	......	4,438	848,585

*Includes 64 cubic yards mixed by hand.

MIRAFLORES LOCKS.

Over 69 per cent of the concrete for the system of two twin locks at Miraflores was in place on June 1, the total amount on that date being 985,658 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixer.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
May 27	1,638	44.83	7	1,606	30.33	4	362	27.00	6	......	3,606
May 28	1,408	45.33	7	1,726	26.17	4	420	37.50	5	......	3,554
May 29	1,118	35.67	7	1,534	25.90	4	498	45.50	6	......	3,150
May 30	......	......	......	......	......	......	......	......	......	......	(Holiday)
May 31	1,630	44.50	7	1,292	24.92	4	365	33.00	5	......	3,287
June 1	1,694	40.50	7	1,188	26.87	4	571	46.00	5	......	3,453
Total	7,488	210.83	7	7,346	134.19	4	2,216	189.00	5.4	......	17,050
Previously reported	......	......	......	......	......	......	......	......	......	3,693	968,608
Grand total	......	......	......	......	......	......	......	......	......	3,693	985,658

CLUBHOUSES CELEBRATE.

Fifth Anniversary of Their Opening Observed at Empire.

The Empire clubhouse was chosen for the scene of the celebration of the fifth anniversary of the opening of the Commission clubhouses for Canal employes, which was held on Tuesday evening, May 28. The building was decorated throughout with palms, flags and Japanese lanterns. The program, held in the entertainment hall, was, as follows:

Overture, Tenth Infantry Band; Invocation, Chaplain A. A. Nellis; quartet, *The Sea Hath Its Pearls*, by Pinsuti, Mrs. A. P. Boyd, Mrs. L. L. Faure, Mr. W. G. Ross, and Mr. E. P. Case; address, Young Men's Christian Association, Mr. Alfred B. Dickson; solo, *Aria from Cavalleria Rusticana*, Mr. W. G. Ross; address, Lieut-Col. Wm. L. Sibert; *Ave Maria*, by Gounod, Mrs. L. L. Faure; Miss Gay Zenola MacLaren; retrospect, Empire clubhouse, Mr. Walter H. Warr; solo, Mrs. A. P. Boyd; address, Mr. J. A. Smith; quartet, *On a Bank—Two Roses*, Mr. A. B. Dickson, Mr. W. G. Ross, Mr. E. P. Case, Mr. Harry Kersey.

The Isthmian Canal Commission authorized the construction of clubhouses for the use of Canal employes at its one hundred and first meeting held in Washington on November 9, 1905. It was reported at that time that a room had been assigned to a club in Cristobal, known as the Cristobal Club, for social and recreative purposes, and following this report, the Commission adopted a resolution to furnish houses to be used for club purposes "provided such clubs shall be open to all *bona fide* gold employes who comply with reasonable regulations." During the year 1907, clubhouses were constructed at Cristobal, Gorgona, Empire, and Culebra, these being the largest villages in the Canal Zone at that time. In 1909, buildings were constructed at Gatun and Corozal, and in the following year, a small clubhouse was opened at Porto Bello. The original request of the Cristobal club for a two-story building, with verandas 10 feet wide on both floors, giving space for billiard rooms, bowling alleys, card, reading, and smoking rooms, with the necessary toilets and showers, and a sleeping room for a steward, was taken as a standard upon which the clubhouses were constructed; other features subsequently added by the Commission being a gymnasium and entertainment hall, barber shop, and refreshment parlors.

The operation of these social centers is in the hands of a superintendent selected from the forces of the Young Men's Christian Association in the United States, and a staff of secretaries and physical directors from the same association for the local work. This staff acts under the direction of an advisory board composed of Canal officials.

The clubhouses are operated at an annual expense of $150,000, two-thirds of which sum is paid by its various activities, and the remainder by the Isthmian Canal Commission. The total membership at the end of April this year was 2,091, or 52 per cent of the gold employes that were in the clubhouse villages on that date.

In 1910, it became the practice to hold moving picture shows weekly. The films of these shows are sent from the United States in lots of eighteen, ten of the best of which are selected for the entertainments. The films are passed on by a board of censors in the United States before they are shipped, and again by a committee of the clubhouse secretaries before they are exhibited.

A popular feature is the library. At the opening of the work the Canal Commission furnished each clubhouse with a library of 600 volumes. The standard reference books, works on history, travel, science, philosophy, and religion were in the same library, but the fiction libraries were different, it being the purpose to change from time to time from one clubhouse to another thus forming a traveling fiction library for the entire Zone. There is now a total of 4,718 books in the libraries, and new fiction is constantly added to the shelves. More than 100 newspapers and periodicals are provided for the reading tables. There is an enrollment of 112 in the study classes; these are engaged principally in the study of Spanish. Sixty-seven are enrolled in the Bible clubs, and there is an average of 52 at the religious meetings.

There is an active spirit in the interclubhouse tournaments held from time to time, billiard and bowling games being the most popular. Indoor baseball is played during the summer months, and the basketball season opens in September, and continues for about half of the year. About six lyceum entertainments are brought from the United States each year.

The junior department has an enrollment of 119; the average attendance in all the clubhouses is about 12. The total number of boys engaged in systematic gymnasium work is 737.

Women are admitted at all times to the lobby and refreshment parlors, and certain afternoons in each week are assigned to them for their club meetings.

Red Cross Finances.

The financial statement of the Canal Zone Chapter of the Red Cross for the month of April, 1912, follows:

RECEIPTS.		
April 1, On hand	$2,973.73	
April 3, Interest credited at bank for February and March.	9.35	
April 9, Dues	1.00	
Total receipts		$2,984.08
DISBURSEMENTS.		
April 3, Remitted to Treasurer, American Red Cross, Washington, one-half of membership dues received during past year	$ 452.00	
April 24, Relief of destitute Americans at Cristobal, four cases	55.00	
Total disbursements		$ 507.00
April 30, Balance on hand		$ 2,477.08

John L. Phillips, *Treasurer.*

Approved:
Wm. L. Sibert, *Acting Chairman.*

Missing Men.

Any one having information regarding the whereabouts of Philip E. O'Brien, formerly of Company E, Sixth Artillery, who is supposed to have come to the Isthmus in search of work in December last, is requested to communicate with The Canal Record, Ancon.

Any one having information regarding the whereabouts of S. Bengston, formerly in charge of seamen on board the dredge *Corozal*, is requested to communicate with the British Vice Consul, Panama.

EXECUTIVE ORDER.

Collection of Distillation Tax.

By virtue of the authority vested in me, the Executive Order of May 13, 1911, providing for the collection of a distillation tax in the Canal Zone, is amended, as follows:

1. The output of each still may be measured by any method approved by the Chairman of the Isthmian Canal Commission, if, in his opinion, measurement by meter, as provided in Section 3 of said Executive Order, is not satisfactory.

2. On and after January 1, 1913, the right to operate any still within the Canal Zone shall cease and determine, and any person who shall, on or after that date, manufacture or distill any of the spirits or alcoholic liquors enumerated in the Executive Order of May 13, 1911, shall be guilty of a misdemeanor, and, upon conviction, shall be punished by a fine not exceeding One Thousand Dollars ($1,000,) or by imprisonment in the district jail for a term not exceeding twelve (12) months, or by both such fine and imprisonment, within the discretion of the court.

3. This Order shall take effect from and after this date.

Wm. H. Taft.

The White House,
May 21, 1912.

PERSONAL.

Justice Thomas E. Brown, Jr., accompanied by Mrs. Brown, returned on the *Colon*, on Sunday, June 2, from a leave of absence, which he spent in the United States.

Major Eugene T. Wilson sailed for New York on the United Fruit Company's steamer *Turrialba*, on Tuesday, June 4, on his annual leave of absence.

Panama Auxiliary, No. 1, U. S. W. V.

The next meeting of the Panama Auxiliary, No. 1, United Spanish War Veterans, will be held at the lodge hall in Empire on Sunday, June 9, at 1.30 p. m., when there will be a muster and installation of officers. It is requested that all the ladies whose signatures appear on the charter, and all those wishing to join the auxiliary as charter members, be present, as the charter will be closed at this meeting. Members of the U. S. W. V. are invited to attend. Anna Hoffman, *Chairman.*

Gatun, C. Z., June 1, 1912.

Parish Celebration at Empire.

The Roman Catholic parish of St. Ferdinand, at Empire, celebrated the feast day of its patron saint, St Ferdinand, on Thursday, May 30. On the eve of the feast, a concert was held in the parish house by the negro section of the congregation, the lower floor being cleared and arranged as an auditorium for the occasion. There were about 300 people present. On the following day, there was a solemn High Mass at 8 a. m., and following this, an all-day church fair was held in the parish house. The festival closed with solemn vespers at 7.30 p. m.

Notice to Owners of Launches on Gatun Lake.

For the convenience of owners of launches, privately owned on Gatun Lake, the Board of Local Inspectors will meet at the Gatun railroad station at 9 a. m., Sunday, June 16, for the purpose of inspecting any and all launches that require it. Owners will please have launches ready and be on the ground themselves at that time.

GOLD HILL LINE COMPLETED.

P. R. R. Relocation Organization to Be Abolished June 30.

The section of the Panama railroad relocation, known as the Gold Hill line, nine and three-eighths miles long, was formally turned over to the Panama Railroad Company at noon, Saturday, May 25, and the relocation organization, which has been conducted as an independent department, will cease to exist after June 30, the close of the present fiscal year. The large cuts and fills on the new line have been practically completed, and such riprapping of fills as will be necessary, as well as taking up construction tracks, and installing the bascule bridge over the Gatun River at Monte Lirio, will be done by the maintenance-of-way forces of the railroad and charged to the relocation account. While the Naos Island breakwater is under construction not more than two or three trainloads of rock a day can be supplied from Culebra Cut, so that the work of riprapping the fills will probably proceed slowly. The construction tracks in the Gatun valley district will be left where they are for the present, as it is not known what effect soaking with water during the rainy season may have on the heavy embankments, and some supplementary work in this connection may be required. There remains to be laid a permanent track through the dump district, north of Gamboa bridge, and this work will probably be postponed, in the interests of economy, until the Central Division has finished operations in that section. At the present time, the new line can be utilized for the running of trains for its entire length, but only freight trains will use the road around Gold Hill, the passenger trains continuing to cross to the other side of the Canal at Gamboa until such time as it is found necessary to take away the dike, by means of which the crossover is made.

The relocated line of the Panama railroad was made necessary by the plans of the Canal Commission for building an 85-foot level lock Canal. The old Panama railroad was used from Colon to Mindi, five miles, but from that point to Corozal, an entirely new line had to be constructed, for the most part through difficult territory. Surveys were made in 1906, but it was not until June, 1907, that actual construction work was begun. The first section built was from Mindi to Gatun, as the old line passed through the present site of the Locks, and it was necessary to remove it as soon as possible. A temporary line was then built from Gatun to Tiger Hill, connecting the high level line at Gatun, with the low grade of the old road at Tiger Hill.

The original plan was to have the relocated line cross the Gatun River valley, at Gatun, on an embankment 82 feet high and one and one-fourth miles long. Borings established the fact, however, that the foundation for this embankment would consist of a 20-foot stratum of clay overlying a bed of soft silt, and the idea was abandoned. The construction of a steel viaduct to cross this section was then considered, but on account of the excessive maintenance cost involved, this plan was also given up. In July, 1907, the plan of extending the road east along the north side of the Gatun River valley to a point about one mile from the Canal Zone boundary line, thence building it south across the valleys of the Quebrancha and Gatun rivers on fills having more stable foundations, was adopted. Work was begun on this section of the road, soon after the adoption of the report, by two steamshovels and a piledriver. About the same time tracks were laid from the old main line to points on the relocation opposite Pedro Miguel, Gatun, San Pablo, and Miraflores. In October, 1909, all but five and one-half miles of the line between Gatun and Gamboa had been completed. On March 28, 1910, the ends were joined near Monte Lirio, and on Sunday, May 1, 1910, the first passenger train passed over this part of the line.

It was originally proposed in building the line south of Gamboa to let it follow closely the east bank of the Canal, and to pass through the Culebra Cut on a berm. Owing to the slides that later developed in the east bank of the Canal, opposite Culebra, the plan had to be abandoned. In July, 1910, the committee appointed to consider a new route recommended that the line be constructed back of Gold Hill, which was approved. Construction work was begun shortly afterward, and this section, the last part of the relocated line to be completed, was practically finished last month. The line from Paraiso Junction to Corozal was formally turned over to the Panama Railroad Company on September 4, 1910, and it was placed in operation soon afterwards.

The old line formerly crossed the Chagres River at Barbacoas. It now crosses it at Gamboa, 10 miles further upstream. The Gamboa bridge is 1,320 feet long, and consists of fourteen 80-foot through girder spans, and one 200-foot through truss span. The only other bridge of size along the route will be that over the Gatun River, near Monte Lirio. It is of the bascule, or balanced lift, type, and will rest on piers designed to carry three plate girders, formerly used in the Barbacoas bridge. Pier No. 3 will be used as a trunnion pier, and one of the old plate girder spans will be converted into a lift span by the installation of a lifting mechanism. The piers are all in place, and one of the spans has been laid. While the work is in progress, trains are using a temporary trestle to cross the river bed. The purpose of the lift span is to permit vessels of size to pass through into the east arm of the lake. The other streams along the railroad are crossed in two or three instances by arch culverts; in the remainder, by ordinary culverts. The pavements of these culverts are invariably elevated above the former beds of the streams, in order to procure more stable foundations, and to prevent their being filled up with sedimentary deposits, which would occur at the lower elevations. The road passes through a tunnel at only one point—at Miraflores station. It is 736 feet long between portals, and is lined with reinforced concrete. Excavation was begun on July 1, 1907, and completed on July 9, 1908. The tunnel was entirely completed and ready for use on May 8, 1909.

In the construction of the road, three systems of labor were tried, one, consisting of carrying on the work by the company's forces; the second, by letting certain sections out to contractors at a fixed price per cubic yard, and the third, by the task method. By far the greater part of the excavation was accomplished by the company's own forces. On March 18, 1908, there were upward of 1,000 men employed on the relocation work, and the highest number at work at any one time was on November 29, 1911, when the force reached 2,514. On May 1, 1912, which practically marked the close of construction operations, there had been excavated a total of 10,168,759 cubic yards; 16,425,292 cubic yards had been placed in embankment fill; 163,908 linear feet of 90-pound, and 64,512 feet of 70-pound, track had been laid.

The best record for steamshovel excavation on the relocated line was made by Steamshovel 257, working in the Gatun section from September, 1910 to September, 1911. This record, contained in the following table, is believed to be the best record ever made on the Isthmus, or in the world:

MONTH	Output by cross-section.		
	Earth	Rock	Total
1910.	Cu. Yds.	Cu. Yds.	Cu. Yds.
September	2,725	37,030	39,755
October	7,900	45,109	53,009
November	8,330	45,000	53,330
December	7,000	40,440	47,440
1911.			
January	4,000	53,310	57,310
February	1,345	57,550	58,895
March	5,400	64,200	69,600
April	....	62,540	62,540
May	....	70,030	70,030
June	....	58,850	58,850
July	....	57,270	57,270
August	....	71,550	71,550
September	....	15,200	15,200
Total	36,700	678,079	714,779

MONTH.	Output by car report	Per cent of time that shovel worked	No. of working days
1910.			
September	37,840	64.3	20
October	58,030	66.1	26
November	50,020	64.1	24
December	50,660	62.5	26
1911.			
January	56,730	75.0	25
February	60,210	79.9	23
March	67,900	77.2	27
April	61,100	70.7	24
May	72,030	77.6	26
June	65,260	72.4	26
July	62,540	74 6	25
August	76,030	80.3	27
September	15,200	76.9	5
Total	733,550	72.3	304

Note—Average per day, 2,351 cubic yards; output for September, 1911 (5 days) taken from car report. Working days are eight hours.

Some serious slides occurred on the relocated line during the process of construction. The plans for a lock level canal required that the new railroad be built two feet above the proposed lake level, which necessitated constructing a high level roadbed through a low level country. The greater part of the time and expense has been necessitated by the crossing of the Gatun valley. From the point where the road leaves the Gatun ridge, to the hills near Monte Lirio, a distance of three and a half miles, the line crosses the main valley of the Gatun River and its several tributaries. In this section there has been placed 5,500,000 cubic yards of embankment. The foundation for some of these embankments was very poor, which necessitated spreading the base of the embankment over a much wider section, in order to reduce the pressure per square foot on the natural ground, and prevent upheaval beyond the toes of the slope.

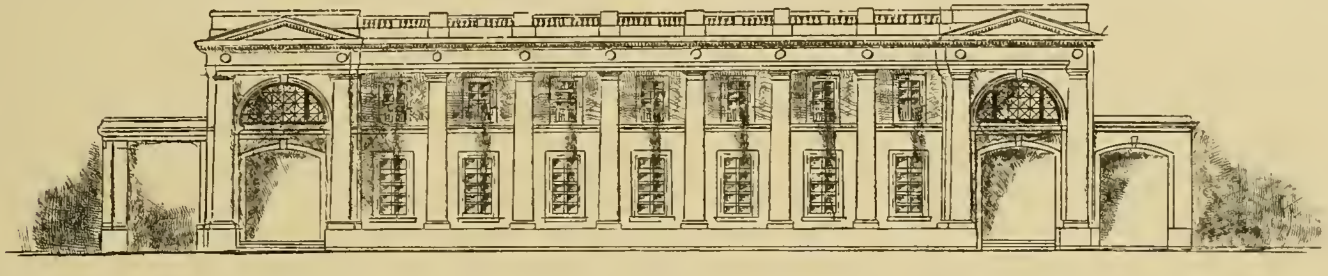
The total length of the new road from Colon station to Panama station is 47.11 miles. The total cost will be about $9,000,000.

A vote of thanks was passed at a meeting of the Memorial Day committee, held Sunday afternoon, June 2, to all those who took part in or contributed to the success of the Memorial Day observance.

NEW STATION AT PANAMA.

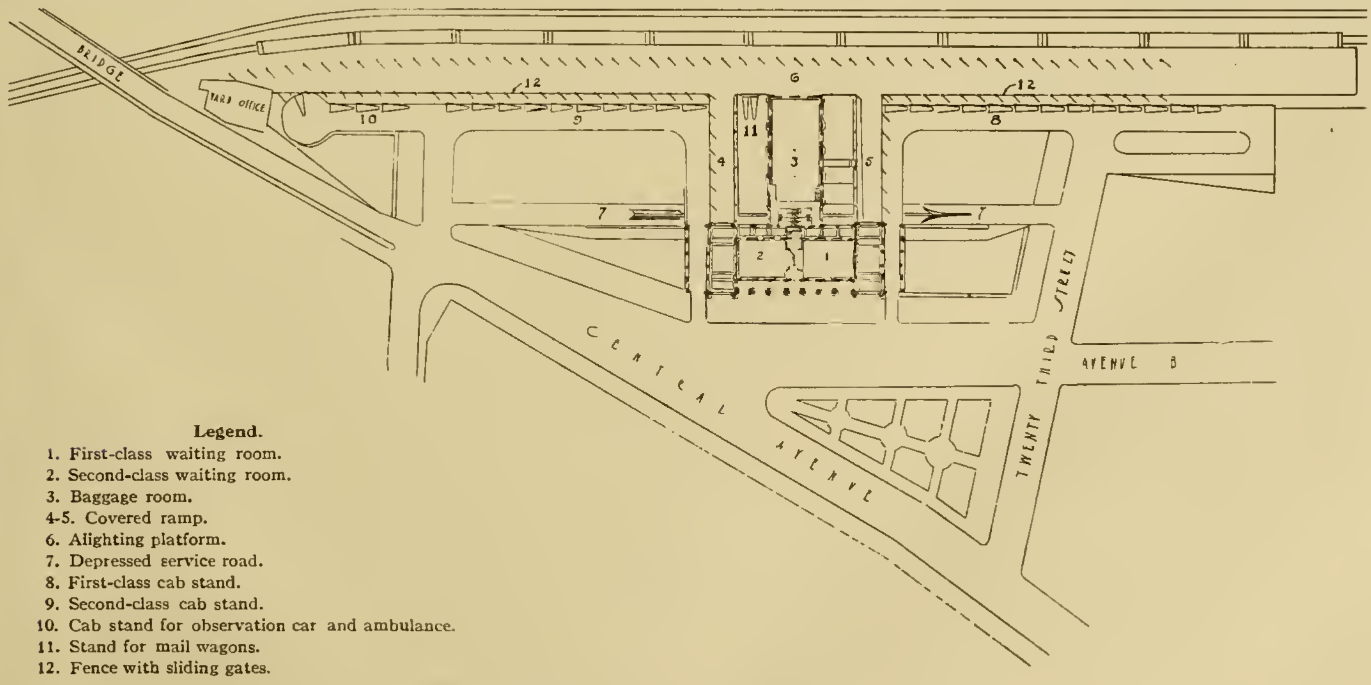
Plans for Improvement of Railroad Terminal have been Approved.

The plans for a modern passenger station, to be built by the Panama Railroad Company in connection with the proposed improvement of its Panama terminal, have been approved, and preliminary work on the site has been begun. The main part of the new building, a front view of which is published herewith, will be of the Italian Renaissance style of architecture, will have a frontage on Central avenue of 170 feet, and will extend back from it a distance of 55 feet. It will be situated just south of the present station, and almost in front of the triangular-shaped plot of of ground now fronting the passenger exits. In front of the building there will be a row of columns, six in number, made of concrete, each 27 feet high and three feet four inches in diameter. The walls will be built of terra cotta, similar to the material used in the erection of the new Hotel Washington at Colon. On each side of the station there will be a vestibule, 20 feet in width, reaching clear to the roof, with vaulted ceiling. Each vestibule opens on a waiting room, one for the first-class, and the other, for the second-class passengers. The first-class waiting room will be on the south side of the station, as at present. Each room will be 30 by 40 feet in size, separated by a closed partition, which will extend from the ticket office, situated on the track side of the station, to the news stand on the street side. On each side of the depot, adjoining the vestibules, will be a covered *porte-cochère* where coaches may come up and discharge passengers. The floors of the waiting rooms and vestibules will be of tile overlying concrete; the ceilings will probably be decorated with designs in stucco. In the rear of the ticket office will be toilets for the use of passengers. In getting to the trains, the passenger will pass through a gate to a ramp, or covered way, which will extend from the waiting rooms to the train shed. As there will be a difference in elevation between the two ends of about eight feet, the floor of the ramp will have about a six per cent grade.



FRONT VIEW OF PROPOSED NEW PANAMA RAILROAD STATION IN PANAMA.

The baggage room will extend at right angles from the main section, and, in its construction, the iron work in the present station will be utilized as far as possible. This will make a difference in the appearance of the roofs, that on the baggage department being hip-shaped, and on the main building more or less flat. The floor of the waiting room section will be on a level with the street, but the ground floor of the baggage room will be on a level with the tracks, a difference of about eight feet. The main section will have only two floors, while the baggage room will virtually have three, including a mezzanine. The lower floor of the baggage room will be used solely for the handling of baggage and express matter. Access to this room can be gained direct from the waiting rooms, and, from a platform especially built for the purpose at one end of the baggage room, passengers may stand and identify their property, or make their wants known. In case a personal search is necessary there are steps in reach, by which they can descend to the floor. The mezzanine floor will be fitted up for offices for the use of the company's cashier, and for the commissary purchasing agent in Panama. The upper floor, in this, as well as in the main part will be devoted to quarters for employes. In the second story of the baggage room there will be 14 double rooms, approximately 12 feet six inches by 25 feet in size, and two single rooms about 12 by 13 feet. Two hallways, one on each side, will extend the entire length of the baggage room section giving access to the rooms, and on the outside of the building, there will be a veranda. It is proposed to install a 1,000-gallon water tank in the attic for use in case of emergency. The second floor in the main section will be divided into eleven single rooms, about 12 by 13 feet in size, all opening on hallways. In this part also, there will be a toilet for all the second floors occupants. Access to the upper floors in both sections is gained by a stairway that ascends back of the waiting rooms.


BRIDGE
YARD OFFICE
10
9
12
6
12
8
11
4
3
5
7
7
2
1
CENTRAL AVENUE
THIRD STREET
AVENUE B
TWENTY
Legend.
1. First-class waiting room.
2. Second-class waiting room.
3. Baggage room.
4-5. Covered ramp.
6. Alighting platform.
7. Depressed service road.
8. First-class cab stand.
9. Second-class cab stand.
10. Cab stand for observation car and ambulance.
11. Stand for mail wagons.
12. Fence with sliding gates.

GROUND PLAN OF PROPOSED NEW PANAMA STATION.

The new ground arrangement has been planned with the idea of making the passenger exits as accessible as possible. There will be a 20-foot sidewalk in front of the station, and at this point, Central avenue will be widened to 50 feet. This width will be continued the entire length of the station, but where the Tivoli road branches off, the thoroughfare will narrow down to about 30 feet. Twenty-third street, which now ends at Avenue B, will be extended on down through the present yard to the roadway that will be laid out parallel with the train shed. All roadways in the grounds will be of the uniform width of 16 feet, with an ingress and an egress on each side of the station for passenger vehicles. By this arrangement, coaches can enter by one road, pass down to the train shed, procure their load, and pass out in another direction, thereby avoiding confusion. Extending midway through the grounds will be a depressed roadway, so-called from the fact that it will be excavated to the level of the railroad tracks, and of the ground floor of the baggage room. This roadway will pass under the ramp, and the carriage ways,on each side of the station, and connect with the roadway alongside the baggage room. It will be for the use of carts, trucks, mail wagons, etc., and by this means, their drivers will be able to keep out of the way of other traffic. Special facilities for loading and unloading the mails directly at the train shed will be provided.

An iron fence will separate the grounds from the alighting platform, and in this fence there will be 10 gates, or passenger exits, five for the first-class, and an equal number for the second-class passengers. The alighting platform will be 30 feet wide and 800 feet long, and has been nearly completed. The train shed is of about the same length, and consists of a butterfly-shaped roof, similar to the one appertaining to the station at Colon, with the exception that the Panama structure is of double construction, whereas the one at Colon is of single construction. The roof, when completed, will project about 13 feet over the road. The courts, four in number, will be planted to grass, and later embellished with plants and flowers.

The constiuction of the main part of the new station, outside of the foundations, will probably be done by contract, and bids for this work will be asked for within a short time. The erection of the baggage section will probably be done by the company's own forces.

Fourth of July Arrangements.

A meeting of the executive committee of the Fourth of July celebration was held at Ancon on Sunday afternoon, June 1. Mr. E. J. Williams, chairman of the finance committee reported that the subscription lists had been printed, and that the deduction blanks and combination and transportation slips would be ready by June 3. Bonded timekeepers have been appointed members of the finance committee to assist in obtaining subscriptions.

Mr. J. A. Smith, chairman of the transportation committee reported that it was proposed to run one through train from Cristobal to Ancon for those traveling to Ancon to attend the celebration, and at least two trains from Gorgona, of which, one will be reserved for the marines and soldiers. In case aquatic sports are held at Balboa, a 30-minute train service could be arranged between the hours of 10.30 a. m., and 2 p. m., from Ancon to Balboa, using the Tivoli spur at Ancon. The last train from Panama will be run after the dance, the exact time to be announced later.

The following chairmen of subcommittees have been appointed by Capt. R. E. Wood, chairman of the entertainment and amusement committee: Athletics, W. H. Warr; water sports, W. W. Spaulding; Marines, Capt. F. Halford; Tenth Infantry, Lieut. L. H. Hohl, refreshments, D. W. MacCormack; printing, C. L. Parker; prizes, Alex. M. Fechtig; decorations, B. C. Poole; police department and stands, Capt. C. W. Barber; exercises, Frank A. Gause. The program has not yet been definitely arranged, as the matter of holding aquatic sports at Balboa is still in abeyance.

Capt. Whitlock of the fireworks committee, reported that fireworks had been ordered to the value of $1,425, and had been apportioned among the different localities, in amounts, as follows: Ancon, $775, Cristobal, $250; Gorgona, $150; Empire-Culebra, $150; Palo Seco, $50; Taboga sanitarium $50. Upon motion, it was decided to increase the Ancon allotment to $900.

Dr. Perry of the dance committee reported that the dance would be held in the ballroom at the Hotel Tivoli, and would start not later than 9 p. m. Suitable music and refreshments will be provided.

The chairman of the executive committee delegated Col. Cooke to act as chairman of the reception committee, he to select his committee members. It was the sense of the committee that invitations be extended to the President of the Republic of Panama, the members of his cabinet, and to the ministers accredited to the Republic, to attend the celebration.

The total allotments, as requested and approved, are, as follows: Entertainment and amusement, $3,200 to $3,500; transportation, $100; finance, $100; fireworks, $1,550; publicity, $50; total, $5,500 to $5,800.

The next meeting of the executive committee will be held at Ancon on Saturday afternoon, June 29.

Masonic Banquet.

On Saturday night, June 22, a St. John's Day banquet will be given at the International Hotel, Panama, under the auspices of the Ancon, Corozal, and Pedro Miguel Masonic clubs. Masons residing on the Isthmus, or visiting brothers, who desire to attend the banquet, may obtain tickets, at $3.50 each, from any member of the committee in charge of the arrangements, or the secretaries of the Pacific, Corozal, and Pedro Miguel Masonic clubs.

Sale of Public Buildings.

OFFICE OF CHIEF QUARTERMASTER,
CULEBRA, C. Z., May 31, 1912.

Sealed proposals will be received at this office until 3 p. m., Saturday, June 15, 1912, and then opened, for the purchase of any or all of eight buildings located at Bas Obispo and Gorgona. List of buildings and information will be furnished upon application to any of the district quartermasters, or at this office. Envelopes containing proposals should be endorsed "Proposals for purchase of buildings," and addressed to Col. C. A. Devol, Chief Quartermaster, Culebra, C. Z.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 12, 1912, (75 meridian time):

DATE.	High	Low.	High.	Low.	High.
	A.M.	A.M.	A.M.	P.M.	P.M.
June 6	......	1.47	7.50	2.13	7.58
June 7	......	2.30	8.35	3.02	8.47
June 8	.....	3.18	9.25	3.55	9.42
June 9	.....	4.11	10.18	4.50	10.43
June 10	......	5.07	11.12	5.45	11.45
			P.M.		
June 11	......	6.02	12.08	6.38	......
June 12	12.42	6.56	1.02	7.30	......

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, June 1, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia	Alhajuela	Gamboa	Bohio	Gatun Lake
Sun., May 26	127.5	93.9	46.8	23.4	23.4
Mon., May 27	126.6	93.1	45.5	23.7	23.6
Tues., May 28	127.0	93.4	45.4	23.8	23.8
Wed., May 29	128.5	94.4	45.5	24.2	24.1
Thurs., May 30	127.6	94.2	46.4	24.5	24.4
Fri., May 31	126.2	92.8	45.2	24.7	24.7
Sat., June 1	126.2	92.8	45.2	24.9	24.9
Height of low water to the nearest foot	125.0	91.0	44.0		

Rainfall from May 1 to 31, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*In.*
Ancon	7.06	12	10.71
Balboa	7.00	12	9.56
*Miraflores	3.60	12	7.60
Pedro Miguel	3.30	12	6.92
Rio Grande	2.48	8	7.18
Central Section—			
Culebra	3.19	8	8.15
*Camacho	2.00	8	6.15
Empire	1.65	8	6.21
Gamboa	1.62	9	7.94
*Juan Mina	1.89	15	10.86
Alhajuela	2.89	14	13.43
*El Vigia	2.48	24	12.81
*Gorgona	3.40	9	8.03
Frijoles	1.84	24	10.28
*Trinidad	2.55	29	11.79
*Monte Lirio	1.40	18	8.34
Atlantic Section—			
Gatun	2.39	18	13.83
*Brazos Brook	1.93	24	11.45
Colon	3.35	24	12.03
Porto Bello	6.41	21	16.65

*Standard rain gage—readings at 5 p. m., daily. Automatic rain gage at unstarred stations—values midnight to midnight.

WEATHER CONDITIONS, CANAL ZONE, MAY, 1912.

May rainfall was below normal at all stations, except Ancon, Balboa, Alhajuela, El Vigia, and Porto Bello. In general the fall was above normal along the immediate Pacific coast and over the upper Chagres basin; slightly below normal along the Atlantic coast, and generally deficient elsewhere. Practically all of this deficiency occurred during the first week of the month.

An unusually heavy rain occurred along the Pacific coast on the 12th of the month. The fall at Ancon during 24 consecutive hours amounted to 7.23 inches, and establishes a new maximum record for this station.

Average temperatures were nearly two degrees above normal and the highest of record for the month of May. The air temperature has been above normal on the Isthmus every month during the present year.

The wind movement was also above normal, and the highest of record for the month.

There was a general deficiency in relative humidity, while the conditions of atmospheric pressure and cloudiness were not far from normal.

The following table summarizes the weather conditions for the month:

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.	Date.		Total inches	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon	29.854	82.0	91	May 5	73	May 21	85	12.03	12.41	17	7,614	N.	26	N.E.	May 18
Culebra	29.840	81.2	90	May 5	70	May 20	87	8.15	11.16	15	5,538	N.W.	27	S. W.	May 8
Ancon	29.828	82.0	96	May 7	71	May 20	87	10.71	8.93	14	4,999	N.W.	23	N. W.	May 2

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The schedule of moving picture entertainments for the week, June 10 to 15 is, as follows: Monday, Gorgona; Tuesday, Cristobal; Wednesday, Gatun; Thursday, Corozal; Friday, Culebra; Saturday, Empire.

Miss Gay Zenola MacLaren will hold entertainments at the local clubhouses on the following dates: Corozal, Friday, June 7; Gorgona, Tuesday, June 11, return engagement; Empire, Wednesday, June 12, return engagement; Gatun, Friday, June 14, return engagement.

COROZAL.

The new bowling alleys were opened for use for the first time on Decoration Day. In the evening the Tenth Infantry orchestra furnished music, while games were rolled by six different local teams. The high score of the evening—202—was rolled by Mr. H. O. Cole. The bowling alleys will be open for women Wednesday and Friday afternoons, and for boys on Tuesday and Thursday afternoons, and Saturday morning.

A Spanish class, with Mr. Curtis as instructor, will hold regular meetings at the clubhouse on Wednesday night of each week.

CULEBRA.

The volleyball teams play on Tuesday and Friday of each week, from 5.10 to 6 p. m. Every one is invited to take part. The two handball courts are ready, and those interested in the game are urged to join the club.

Following are the scores of the games played between Culebra and Gorgona, at Culebra, in the Isthmian duckpin tournament:

Culebra.				Gorgona.			
Lowande...	91	90	85	Davis......	75	75	83
Sterns......	93	83	83	Bornefeld...	92	96	73
Grier.......	80	85	80	Diehl......	92	93	80
Crane......	92	82	78	Anderson...	101	96	91
Silver......	100	80	89	Bishop.....			78
				Ruchte.....	80	75	
Total....	456	420	416		440	435	405

The Cristobal billiard team played Culebra at home with the following result:

Culebra.		Cristobal.	
Tragsdorf...........	100	Pack................	80
Conlan.............	97	Rice................	100

EMPIRE.

Empire took two out of three games from Gatun, Saturday, June 1. Scores:

Empire..... 465 408 433 Gatun...... 413 444 414

The gymnasium classes started Wednesday, June 5, and will be held regularly twice each week hereafter. A fencing class is being formed; all interested speak to Mr. Russell.

GORGONA.

The following games of duckpins were rolled on the Gorgona alleys Monday, May 27, between Gorgona and Camp Elliott:

Gorgona.				Camp Elliott.			
Seebt......	98	83	78	Egert......	90	84	107
Moyer.....	86	89	77	Kribel......	90	67	76
Denst......	75	80	93	Hicks......	95	70	92
Dunlop.....	82	94	89	McAbre....	88	101	83
Haggerty...	78	88	105	Teeters.....	84	83	89
Total....	419	434	442		447	405	447

Saturday night, June 1, the following games were rolled between Gorgona and Culebra:

Culebra.				Gorgona.			
Mengel.....	97	78	84	Seebt......	82	96	94
Judge......	93	95	83	Robertson..	85	83	78
Brown.....	89	91	90	Denst......	78	102	84
Hill........	81	96	86	Dunlop....	78	82	78
Case.......	90	94	85	Haggerty...	86	84	94
Total....	450	454	428		409	447	428

A "smoker" was held at the clubhouse on Tuesday night, May 28, in honor of the Gorgona indoor baseball team. Mr. C. Patterson introduced the players, and Manager Kuentz and Captain Ridge responded on behalf of the team. A flashlight picture was taken of the gathering, which will be on sale at the office.

The weekly sunset song service will be held at the clubhouse on Sunday, June 9, at 7 p. m. Admission free.

The current topics club has changed its time of meeting from Monday to Wednesday nights, at 7.45. All men are invited to attend.

GATUN.

Gatun and Gorgona broke even in the billiard match at Gatun on Saturday, June 1. The results were as follows:

Gatun		Gorgona	
Townsley	100	Walcott..........	94
Wurster..............	88	Walcott..........	190

Mr. George W. Huttelmaier won a pennant for having bowled the three highest games of duckpins for the month of May. Mr. J. Mohen received a pennant for having bowled the three highest games of tenpins.

Another order for new books was sent to the United States during the past week. The library now consists of about 1,100 volumes.

The Gatun dramatic club is holding rehearsals for the production of a comic opera entitled "Sinbad the Sailor," which will be given in about two weeks.

Gatun took one out of three games of duckpins in a match with Empire on Saturday, June 1.

The Gatun checker club is still awaiting replies to its challenge issued on May 18.

The pianola in the clubhouse has been thoroughly overhauled and repaired by an expert mechanic and is now in excellent condition.

Seventy-six pictures of the various groups, recently photographed at the clubhouse, have been sold.

CRISTOBAL.

On Thursday evening, June 6, the Tenth Infantry Band will give a concert in the auditorium, beginning at 8 p. m. Admission free.

The duckpin games scheduled between Camp Elliott and Cristobal for Saturday evening, June 1, were rolled on Thursday evening, May 29, the local team taking three straight games on the local alleys.

On Saturday evening, June 8, the Cristobal team will meet the Culebra team on the local alleys, and will also send a team to Culebra.

There will be a meeting of the local basketball enthusiasts in the game room Friday evening, June 7, for the purpose of organizing a local departmental tournament. Teams from the Mount Hope depot, commissary, Panama railroad, and the dry dock will enter for prizes to be determined later. All interested in basketball are invited to attend this meeting.

Band Concerts.

A band concert will be given by the Isthmian Canal Commission Band at Hotel Tivoli, Ancon, C. Z., Sunday, June 9, 1912, at 8 p. m. The program follows:

1. March—*Sheridan Sabres*..............St. Clair
2. Selection—*The Golden Girl*.............Howard
3. Waltz—*The Wedding of the Winds*..........Hall
4. Overture—*Hungarian Lustspiel*......Keler Bela
5. Intermezzo—*After Sunset*................Pryor
6. Flower Song—*Hearts and Flowers*.......Tobani
7. (a)—*Sextet from Lucia*.................Donizetti
   (b)—*Pilgrims Chorus from Tannhauser*....Wagner
8. Medley Selection—*Papular Songs*.......Schultz
9. March—*The Hustler*...................Alford

CHAS. E. JENNINGS, *Musical Director.*

A band concert will be given by the Municipal Band of Colon, in exchange with the Isthmian Canal Commission Band, at Cristobal, C. Z., Thursday, June 13, 1912, at 8 p. m. The program follows:

1. Paso Doble-Español—*Angelillo*...........Lopez
2. Intermezzo—*Cleopatra*.................Clement
3. Overture—*La Princesse Enchantée*......Langlois
4. Gran Fantasia-Polka—*Estella*.............Hall
5. Primera—*Gran Marcha de la Antorchas*. Meyerbeer
6. Gran Fantasia de la Opera—*Assedie di Arlem* ... Verdi
7. Overture—*Cleapatra*................Maneincilli
8. Batalla—*El Citie de Zaragoza*.............Oudri
9. Habanera—*Pilar* ....Tamayo
10. March—*Call of America*........von der Mehden

TOMAS VILLANUEVA, *Director.*

The next concert of the I. C. C. Band will be given at Culebra, June 16, at 4.30 p. m.

Change in Schedule of Sight-seeing Train.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT.
COLON, R. P., June 1, 1912.

Effective Monday, June 3, the Panama railroad sight-seeing train will be operated three days each week, only, on the following schedule:

Monday forenoon—Leave Panama passenger station 7.45 a. m., go through Culebra Cut, then proceed to Culebra to visit the models. Lunch will be served at the Culebra Commission dining room.

Monday afternoon—Leave Culebra for the Pacific Division at 1.30 p. m., and leave Pedro Miguel passenger station at 2 p. m., for the trip over the Pacific Division, after which the train will return to Panama.

Thursday forenoon and afternoon—Train will leave Colon passenger station at 8 a. m., and 1.30 p. m., for Gatun, after which trip will be made over the Atlantic Division, the train returning to Colon passenger station after each trip.

Saturday forenoon—Leave Panama passenger station for the Pacific Division 7 a. m. After the morning trip over this division the train will return to Panama.

Saturday afternoon—Leave Panama passenger station 1.45 p. m., go through Culebra Cut, then proceed to Culebra to visit the models, after which the train will return directly to Panama carrying passengers on regular transportation.

J. A. SMITH,
General Superintendent.

OFFICIAL CIRCULARS.

Transfer of Empire Shops to Mechanical Division.

CULEBRA, C. Z., May 27, 1912.

CIRCULAR No. 349-A:

1. Effective July 1, 1912, the Empire shops, including day and night steamshovel repair gangs, and the inspectors in the Culebra Cut, will be transferred from the Central Division to the Mechanical Division.

2. After July 1, 1912, the Mechanical Division will manufacture all spare parts for steamshovels, rock drills, and other mechanical apparatus heretofore made in the Empire shops, will inspect and repair all steamshovels, etc., and will perform all mechanical work, both day and night, that may be required by the division engineer, or the general inspector of the Central Division. The division engineer of the Central Division will inform the superintendent of the Mechanical Division of the manner in which the cost of repairs to the different classes of apparatus should be kept and reported to him.

3. All manufacturing work and heavy repairs heretofore performed in the Empire shops will be transferred as promptly as practicable after July 1, 1912, to the Gorgona shops. A sufficient force will be retained in the erecting and carpenter shops at Empire, under the superintendent of steamshovel repairs, for making light repairs to steamshovels, rock drills, track jacks and track drills, hand and push cars, and emergency repairs to sump pumps, that do not require machine work; carpenter work exclusive of manufactures; and day and night repairs to steamshovels and other mechanical equipment used by the Central Division.

4. All machines, tools, gauges, etc., in the Empire shops will be inventoried and transferred without charge to the Mechanical Division. Such gauges, tempets, jigs, dies, tools, machines, etc., required for the above classes of work will be transferred to the Gorgona shops in the prescribed manner; all other machines, tools, etc., not required by the day and night repair gangs will be cleaned and doped.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Acting Division Engineer, Atlantic Division.

CULEBRA, C. Z., May 31, 1912.

CIRCULAR No. 447:

During the absence of Lieut.-Col. Wm. L. Sibert on leave, Major Chester Harding will be in charge of the Atlantic Division as acting division engineer.

Effective June 1, 1912. H. F. HODGES,
Acting Chairman and Chief Engineer.

Acting Subsistence Officer.

CULEBRA, C. Z., June 3, 1912.

CIRCULAR No. 449:

During the absence from the Isthmus of Lieut.-Col. E. T. Wilson, subsistence officer, Isthmian Canal Commission, all his duties in connection with the Subsistence Department, Isthmian Canal Commission, and the Commissary Department, Panama Railroad Company, will be performed by Capt. F. O. Whitlock, assistant subsistence officer, Isthmian Canal Commission. Effective June 4, 1912.

H. F. HODGES,
Acting Chairman, Isthmian Canal Commission.
Second Vice-President, Panama Railroad Company.

Acting Charge of Panama Railroad Relocation.

CULEBRA, C. Z., June 1, 1912.

CIRCULAR No. 448:

Effective this date, Mr. E. Zook, engineer of maintenance, will be in charge of the relocation of the Panama railroad during the absence on leave of Lieut. Frederick Mears. H. F. HODGES,
Acting Chairman and Chief Engineer.

Meritorious Sick Leave and Disability Certificates.

CULEBRA, C. Z., May 31, 1912.

CIRCULAR No. 235-F:

In the future, all recommendations for meritorious sick leave, together with disability certificates, are to be forwarded in quadruplicate, on Form C. E. 206-3, direct to the Examiner of Accounts, who will check the same and transmit them to this office for approval. One copy, with disability certificate, will be returned by the Examiner of Accounts to the department making the recommendation.

Requisition should be made at once for a supply of Form C. E. 206-3, upon receipt of which all obsolete meritorious sick leave forms should be destroyed.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Acting Chief Engineer, P. R R.

PANAMA RAILROAD COMPANY,
COLON, R. P., May 31, 1912

CIRCULAR No. 100:

All Concerned: During the absence of Lieut. F. Mears, chief engineer, on vacation, effective June 1, 1912, Mr. E. Zook, engineer of maintenance, is appointed acting chief engineer.

J. A. SMITH, *General Superintendent.*

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning June 1, 1912.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Plate, per pound	9
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds,) per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	†25
Venison (Imported), Stew, per pound	*6
Forequarter (not under 6½ pounds), per pound	*9
Rack (not under 5½ pounds), per pound	*20
Saddle (not under 7½ lbs.), per pound	*20
Leg (not under 9 pounds), per pound	*20
Chops, per pound	*24
Cutlets, per pound	*24

MISCELLANEOUS.	
Caviar, Russian in ¼-lb. jars, jar	89
Livers—Beef, per pound	8½
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	10
Devonshire Farm, per pound	19
Sweetbreads—Beef, per pound	25
Eggs, fresh, dozen	26
one-half dozen only	14
Bluefish, per pound	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	14
Fluke, fresh, per pound	10
Shads, fresh, each	*50
Roes, shad, pair	25

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 5½ pounds each	1.10
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each ††60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.25
Hens, milk fed, for roasting, about 3 pounds each	50
Broilers, milk fed, each	70
Broilers, corn fed, each	60
Turkeys, per pound	23
Squabs, each	35
Capons, each	2.10
Ducks, teal, per pair	.50
Ducks, Blackhead, pair	60
Partridges, pair	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30

CURED AND PICKLE MEATS.	*Price.*
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Ham—Sugar cured, Half, for boiling, per pound.	21
Boiled, per pound	28
Hocks, per pound	?8
Bacon—Breakfast, whole piece, per pound	23
sliced, per pound	24
Pork, salt, family, per pound	13
Ox tongues, each	1.00
Pigs'feet, per pound	9
Tongues, per pound	18

DAIRY PRODUCTS.	
Butter—Creamery, special, per pound	38
Sheffield Farms, extra, fancy per lb.	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	22
Swiss, per pound	28
Edam, each	1.00
Parmesan, lb.	35
Edam, in tins, per tin	26
Neufchatel, cake	6
Gouda, per pound	34
Milk (Certified), per bottle	**20
Butter, bottle	**15
Fer-mil-lac, bottle	**20
Ice cream, quart	?25
½-gallon	?50

VEGETABLES AND FRUITS.	
Asparagus, per bunch	10
Beets, per pound	3
Celery, per head	10
Cabbage, per pound	5
Cucumbers, per pound	10
Carrots, per pound	5
Cauliflower, per pound	8
Egg plant, per pound	10
Lettuce, per pound	15
Onions, per pound	4
Potatoes, white, per pound	3
sweet, per pound	2
Plant, oyster, per pound	14
Parsnips, per pound	6
Rhubarb, per pound	*4
Squash, per pound	5
Turnips, per pound	†4
Tomatoes, per pound	11
Yams, per pound	3
Apples, per pound	†10
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, California navel, per dozen	30
Oranges, Jamaica, per dozen	12
Pinepples, each	12½

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

††Fowls weigh each about as follows: 3, 3½, 4, 4½ and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight, is supplied and refund note sent for difference.

?Sold only from commissaries; no orders taken for delivery.

Misdirected Letters.

ANCON, C. Z., June 5, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee.

Berdean, Ray W.
Blake, Marion
Brown, Franklin M.
Brown, Thomas
Campbell, Frank (2d class)
Carpenter, Thomas C.
Chambers, F. H.
Cornish, Vaughan
Corwin, Dexte
Cross, Fred S.
Davidson, E. H.
Day, James M.
Dewey, F. C.
DuBois, Homer
Edward, F.
Elwood, Reita A.
Gibson, John
Grace, Capt. H. L.
Greene, Mrs. J. W.
Hersley, Mr.
Hines, Mrs. Helen
Hines, W. P.
Hudson, F.
Jones, W.
Josiah, Charles
La Point, W. F.
Lovell, Joseph
Marshall, J.
Miller, A.
Mitchell, Mrs. Earl C. (2d class)
Mooney, Miss Virginia
Mooris, Mable
Plummer, Mrs. W. P.
Pryce, Caroline
Ramsey, Etta
Roose, Rev. J. D.
Schwable, Frank J.
Schott, Miss Anna
Sexton, C. B.
Smith, Robert
Stephens, Mrs. F. H.
Taylor, Mrs. Carrie
Townsend, L. A.
Vennessee, Mrs. Annie
Williamson, Mrs. T.
Wiley, Lewis
Wilins, Walter R.
Wilkinson, Willie

Sale at Public Auction.

There will be sold at public auction, by the district quartermaster at Gatun, Canal Zone, at the Y. M. C. A. clubhouse, at 2 p. m., Saturday, June 8, 1912, to the highest bidder for cash the following Isthmian Canal Commission property:

Two (2) billiard tables.

The Government reserves the right to accept or reject any or all bids.

For further information apply to the District Quartermaster, Gatun, Canal Zone.

R. E. WOOD, *Acting Chief Quartermaster.*

LOST—Bunch of keys, Sunday, May 18, on Front street, Colon, between Cristobal and Slifer park. Reward if returned to the office of THE CANAL RECORD.

LOST—On train No. 26, Sunday, May 26, between Gatun and Colon, on first-class coach No. 104, Eastman Kodak 4 by 5. Finder please return to T. R. Woolfolk, Cristobal laundry, and receive reward.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steamship Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line.

NEW YORK TO CRISTOBAL.				
Advance	P. R. R.	Monday	June	3
Panama	P. R. R.	Saturday	June	8
Allianca	P. R. R.	Friday	June	14
Colon	P. R. R.	Friday	June	21
Advance	P. R. R.	Thursday	June	27
Panama	P. R. R.	Wednesday	July	3
Allianca	P. R. R.	Tuesday	July	9
Colon	P. R. R.	Monday	July	15
Advance	P. R. R.	Monday	July	22
Panama	P. R. R.	Saturday	July	27
Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21
Allianca	P.R.R.	Tuesday	Aug.	27

CRISTOBAL TO NEW YORK.				
Colon	P. R. R.	Sunday	June	9
Advance	P. R. R.	Saturday	June	15
Panama	P. R. R.	Friday	June	21
Allianca	P. R. R.	Thursday	June	27
Colon	P. R. R.	Wednesday	July	3
Advance	P. R. R.	Tuesday	July	9
Panama	P. R. R.	Monday	July	15
Allianca	P. R. R.	Sunday	July	21
Colon	P. R. R.	Sunday	July	28
Advance	P. R. R.	Saturday	Aug.	3
Panama	P. R. R.	Friday	Aug.	9
Allianca	P. R. R.	Thursday	Aug.	15
Colon	P. R. R.	Wednesday	Aug.	21
Advance	P.R.R.	Tuesday	Aug.	27

NEW YORK TO COLON.				
Zacapa	U. F. C.	Wednesday	May	29
Sixaola	U. F. C.	Saturday	June	1
Prinz Joachim	H.-A.	Saturday	June	1
Almirante	U. F. C.	Wednesday	June	5
Thames	R. M.	Saturday	June	8
Carrillo	U. F. C.	Saturday	June	8
Prinz Eitel Friedrich	H.-A.	Saturday	June	8
Prinz August Wilhelm	H.-A.	Saturday	June	15
Turrialba	U.F.C.	Saturday	June	15
Metapan	U. F. C.	Wednesday	June	19
Prinz Sigismund	H.-A.	Saturday	June	22
Trent	R. M.	Saturday	June	22
Tivives	U. F. C.	Saturday	June	22
Zacapa	U. F. C.	Wednesday	June	26
Prinz Joachim	H.-A.	Saturday	June	29
Sixaola	U. F. C.	Saturday	June	29
Prinz Eitel Friedrich	H.-A.	Saturday	July	6
Prinz August Wilhelm	H.-A.	Saturday	July	13
Prinz Sigismund	H.-A.	Saturday	July	20

COLON TO NEW YORK.				
Prinz Sigismund	H.-A.	Monday	June	10
Trent	R. M.	Tuesday	June	11
Tivives	U.F.C.	Tuesday	June	11
Zacapa	U. F. C.	Thursday	June	13
Sixaola	U. F. C.	Tuesday	June	18
Prinz Joachim	H.-A.	Tuesday	June	18
Almirante	U. F. C.	Thursday	June	20
Prinz Eitel Friedrich	H.-A.	Monday	June	24
Magdalena	R. M.	Tuesday	June	25
Carrillo	U. F. C.	Tuesday	June	25
Santa Marta	U. F. C.	Thursday	June	27
Prinz August Wilhelm	H.-A.	Tuesday	July	2
Turrialba	U. F. C.	Tuesday	July	2
Metapan	U. F. C.	Thursday	July	4
Prinz Sigismund	H.-A.	Monday	July	8

NEW ORLEANS TO COLON.				
Atenas	U.F.C.	Saturday	June	1
Orleanian	U. F. C.	Wednesday	June	5
Parismina	U. F. C.	Saturday	June	8
Cartago	U. F. C.	Wednesday	June	12
Abangarez	U. F. C.	Saturday	June	15
Heredia	U. F. C.	Wednesday	June	19

COLON TO NEW ORLEANS.				
Abangarez	U. F. C.	Thursday	June	6
Heredia	U. F. C.	Thursday	June	6
Atenas	U. F. C.	Thursday	June	13
Orleanian	U. F. C.	Thursday	June	13
Parismina	U. F. C.	Thursday	June	20
Cartago	U. F. C.	Thursday	June	20

P. R. R. steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Eitel Friedrich* call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. .; for New Orleans via Limon, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays at 2 p. m., and Thursdays at 11 a. m.; for Bocas del Toro, on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JUNE 12, 1912. No. 42.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

First Test of Lock Gate Air Chambers.

The lower part of each leaf of the lock gates is a watertight air chamber, so that the use of the leaf will be buoyed up by the surrounding water, reducing the weight on its hinges and making it easier to move. In order to keep the leaf from lifting when the gates are closed, the upper part of the leaf has holes on the side toward the upper lock level to let water in and thus weight the leaf down. The air chamber of the west leaf of the upper guard gate in the east chamber of Gatun Locks was tested on June 10, by filling it with water. The leaf is built with a watertight manshaft extending from the top to the air chamber, and as this was also filled with water, the pressure of the water in the air chamber was slightly greater than that to which the gate will be subjected when in use, as the surface of the water will be about one foot below the top of the gate. The test was highly satisfactory, the leakage being very small and easily remedied.

The air chamber of this leaf contains 13,000 cubic feet. The upper guard gates, 54 feet 8 inches high, are the smallest of the gates in the locks, except the sea gates. For the higher gates the air chambers are proportionately larger.

Canal Work in May.

The grand total of Canal excavation to June 1 was 170,930,045 cubic yards, leaving to be excavated 24,393,334 cubic yards, or less than one-eighth of the entire amount for the completed Canal.

The total for May was 2,506,916 cubic yards, as compared with 2,570,592 cubic yards in May, 1911.

The dry excavation amounted to 1,624,695 cubic yards, and was principally by steamshovels. The dredges removed 795,331, and 86,890 cubic yards were sluiced at Miraflores Locks, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 460,137 cubic yards. Of this total, 27,134 cubic yards were dry excavation at Mindi, and the remainder was wet excavation—232,473 cubic yards from the Atlantic entrance, and 200,530 cubic yards near the Locks.

The total excavation in the Central Division was 1,418,284 cubic yards, 1,405,760 cubic yards from the Culebra Cut section, and 12,524 cubic yards from the Chagres section.

In the Pacific Division, the total excavation was 628,495 cubic yards, 449,218 cubic yards of which were taken out by dredges at the Pacific entrance, and 86,890 cubic yards by sluicing. The total dry excavation amounted to 179,277 cubic yards; 140,163 cubic yards from the prism, and 39,114 cubic yards near the locks.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Locks, Dam and Spillway	......	....	....
Mindi	27,134	....	27,134
Total	27,134	....	27,134
Wet excavation—			
Atlantic entrance	229,626	2,847	232,473
Locks, Dam and Spillway	200,530	....	200,530
East Diversion	....	....	....
Total	430,156	2,847	433,003
Total wet and dry excavation	457,290	2,847	460,137

CENTRAL DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Culebra Cut	1,405,760	......	1,405,760
Chagres section	12,524	....	12,524
Obispo Diversion	....	....	....
Total	1,418,284	....	1,418,284

PACIFIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Locks, Dams and Spillways	39,114	....	39,114
Diversions	....	....	....
Prism, south of Pedro Miguel Locks	140,163	....	140,163
Total	179,277	....	179,277
Wet excavation—			
Pacific entrance	388,310	60,908	449,218
Miraflores Locks	....	....	....
Diversions	....	....	....
Total	388,310	60,908	449,218
Total wet and dry excavation	567,587	60,908	628,495

TOTAL CANAL EXCAVATION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation	1,624,695	....	1,624,695
Wet excavation	818,466	63,755	882,221
Total	2,443,161	63,755	2,506,916

Mean rainfall along Canal (ten stations), 9.01 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as a prism, diversions, or locks, etc., that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc., It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacifiic.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks.	7,746	102,831	110,577
Concrete laid in dams and spillways	1,920	....	1,920
Fill placed in dams	421,750	53,002	474,752

Dredge Finishes Its Work at Gatun.

Pipe line suction dredge *No. 82*, which has been engaged on the lake side of the east wing of Gatun Dam, pumping hydraulic fill into the two wings of the Dam, and placing a supporting fill around the cellular approach wall at the upper end of Gatun Locks, has been retired from service at Gatun, and is being overhauled at the foot of the west toe, about 300 yards from the Spillway intake. Three other pipe line suction dredges, two below and one above Gatun Dam, are still supplying hydraulic material for its construction.

Removing French Dump from Canal Bank.

In accordance with the policy of contending with slides in Culebra Cut by lightening the tops to reduce the pressure on the masses in motion, one steamshovel has been put at work near the west side of the present channel, between the villages of Cerro and Culebra, to remove an extensive dump made during the French excavation. This dump lies, in general, parallel to the Canal channel, is about 2,000 feet long, from 20 feet wide at Station 1,740 to 300 feet wide at Station 1,750, and rises about 30 feet above the surrounding area. Part of it has slipped into the Cut in connection with a large slide just north of Culebra. Approximately 250,000 cubic yards of material above the edge of the Cut, or dump, are to be excavated. The spoil is dumped on the west side of Culebra, in extension of a dump started there in 1907.

Decrease of Concrete Work at Gatun Locks.

The amount of concrete placed in the walls of Gatun Locks during the month of May amounted to 7,745½ cubic yards, which is the least amount placed during any month since the first month of concrete placement in the Locks—August, 1909. Only two of the eight 2-cubic yard Chicago cube mixers in the construction plant were employed, and these were not in continuous use. The walls of the Locks proper are finished, except for placing small quantities of concrete in tunnel construction and grouting machinery. The only heavy masonry being placed is in the cellular approach wall at the upper end of the Locks. The output of concrete will be small until the inauguration of work on the lower wing and approach walls, at the sites of which excavation is being made by pipe line suction

NOTES OF PROGRESS.

(*Continued.*)

dredge. When the excavation has been completed, the pit will be pumped out, and the laying of concrete for the walls should begin about September 1, 1912.

The extent to which the force employed at Gatun Locks has been reduced is indicated by the contrast between the payrolls for September, 1910, when concrete placement was in full swing, and for May, 1912. Figures are for the forces engaged on the Locks proper, exclusive of backfilling.

In September, 1910, the amount paid to "gold" employes was $44,947.61; to "silver" employes, $91,714.71; total, $136,662.32. In May, 1912, the rolls amounted to $24,652.25 for "gold" employes, and $52,680.36 for "silver" employes, a total of $77,332.61.

Transfer of Excavating Pumps.

In preparation for the hydraulic excavation of the Canal channel through the section between the Agua Dulce pressure plant and the dike a mile south of it retaining the waters of the Pacific, two more centrifugal pumps are being transferred to the east side of the lagoon. One pump began work in connection with a monitor at the north end of this section, 800 yards south of Miraflores locks, early in April, immediately after the lagoon had been pumped out. The pumps will be placed at intervals between the first dike, and the retaining dike, so as to share the portion of the channel which is out of the scope of the first pump. The material excavated will be forced through pipe lines, under the sand track and across the Rio Grande diversion, to the flats which are to be reclaimed between the river and the Panama railroad, opposite Corozal.

Inasmuch as the section of channel has been an estuary, the soil is very soft and it has been necessary to build trestles out from the side to support the tracks for carrying the materials for the pump and pumphouse. Piledrivers have been used to place the uprights for the bents on 15-foot centers.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 89 per cent completed, 201,119 cubic yards, out of a total of 225,000, having been placed at the close of work on June 8, A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
June 3	132	7.15	2
June 4	144	7.45	2
June 5	116	6.30	1
June 6	....	....	....
June 7	132	8.00	2
June 8	100	7.00	1
Total	624	36.30	1.60
Previously reported	200,495		
Grand total	201,119		

Steamshovel Wrecked by Slide.

Steamshovel No. 218, working in rock in the nearly completed portion of the Canal channel opposite Las Cascadas, was totally wrecked by a slide on May 29. The shovel was cleaning up, its track being at elevation 39 feet above sealevel, on the final bottom of the Canal at that point. The adjacent bank, on the west side, was almost vertical to the level of the 95 foot berm. The excavation loosened a pocket in the bank, and about 2,000 cubic yards of rock slid down in an avalanche, burying the shovel, so that only a portion of the boom showed above the mass. The crew escaped without injury. The wreckage was hauled to the shops at Empire on four flat cars on June 2, and it was found that scarcely an essential part of it, except the dipper and its shaft, was not broken or deformed.

This is the most destructive accident that has occurred to any of the steamshovels engaged in the Canal work. In the explosion at Bas Obispo on December 12, 1908, by which 22 Canal employes were killed, steamshovel No. 261 was blown to pieces, but it would have been repaired had it not been desirable to use it for supplying parts to other shovels in need of repairs. No. 218 has been reduced to scrap. It was a 95-ton Bucyrus shovel and had made a good record.

CONCRETE WORK IN THE LOCKS.

Over 86 per cent of the concrete for the locks is in place, the amount at the close of work on June 8 being 3,730,664½ cubic yards, out of a total of approximately 4,302,563. A total of 21,952 cubic yards of concrete was laid in the locks during the week ending June 8.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on June 8 being 1,876,012½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending June 8, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
June 3	154	2.38	2	....	....	....	....	180
June 4	152	3.00	2	....	....	....	....	160
June 5	168	2.50	2	....	....	....	....	195
June 6	388	6.36	2	....	....	....	....	424
June 7	354	6.08	2	....	....	....	....	354
June 8	230	3.54	2	....	....	....	....	230
*Portable mixer	....	....	....	97	....	....	....	....
Total	1,446	25.06	2	97	....	....	....	1,543
Previously reported	....	....	....	....	....	....	....	1,874,469½
Grand total	....	....	....	....	....	....	....	1,876,012½

The amount shown for the portable mixer (reinforced concrete) was placed on the following days: June 3rd, 26; June 4th, 8; June 5th, 27; June 6th, 36.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 95 per cent completed, 850,785 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on June 8. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
June 3	92	2.50	1	317	29.00	6	....	409
June 4	82	2.25	1	330	39.00	6	....	412
June 5	44	1.75	1	278	30.00	5	....	322
June 6	74	2.00	1	206	15.50	3	....	280
June 7	348	8.50	1	128	17.00	4	....	476
June 8	80	2.00	1	221	18.50	4	....	301
Total	720	19.00	1	1,480	149.00	4.33	....	2,200
Previously reported	....	....	....	....	....	....	4,438	848,585
Grand total	....	....	....	....	....	....	4,438	850,785

MIRAFLORES LOCKS.

Over 71 per cent of the concrete for the system of two twin locks at Miraflores was in place on June 8, the total amount on that date being 1,003,867 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
June 3	1,466	34.50	7	928	13.33	2	490	55.00	7	....	2.884
June 4	1,722	44.25	7	1,330	19.00	2	504	43.50	7	....	3,556
June 5	1,106	30.50	6	1,210	17.33	2	428	30.50	6	....	2,744
June 6	982	29.33	4	1,306	19.60	3	427	47.00	7	....	2,715
June 7	1,232	31.25	5	1,426	21.55	3	409	45.00	6	....	3,067
June 8	1,616	39.00	7	1,360	19.91	3	267	20.00	3	....	3,243
Total	8,124	208.83	6	7,560	110.72	2.5	2,525	241.00	6	....	18,209
Previously reported	....	....	....	....	....	....	....	....	....	3,693	985,658
Grand total	....	....	....	....	....	....	....	....	....	3,693	1,003,867

STEAMSHOVEL RECORDS.

Work of Central Division Shovels in May.

During the month of May, the total amount of material excavated in the Central Division was 1,418,284 cubic yards, of which 230,412 cubic yards were classified as earth, and 1,187,872 cubic yards as rock.

Of this quantity, 1,412,380 cubic yards were removed by steamshovels. Contractors removed 5,904 cubic yards by steamshovel.

The high record for the month was made by Shovel 231, working 25½ days in the Pedro Miguel district, which excavated 60,308 cubic yards of rock.

The second best record for the month was made by Shovel 217, working 26 days in the Culebra district, which excavated 47,869 cubic yards of rock.

The best record for a shovel of the 70-ton class was made by Shovel No. 115, working 26 days in the Culebra district, which excavated 36,015 cubic yards of earth and rock.

Shovel No. 203, working in the Culebra district, made a high record for one day by excavating 3,135 cubic yards of rock on May 6.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best record for the month, and for one day, are shown below:

BEST RECORD FOR THE MONTH.

CULEBRA DISTRICT.

SHOVEL No.	CUBIC YARDS.			
	Earth.	Rock.	Total.	No. of days at work.
217	....	47,869	47,869	26
256	....	47,728	47,728	25
203	....	46,526	46,526	26
EMPIRE DISTRICT.				
228	....	38,636	38,636	26
211	....	37,941	37,941	26
229	....	34,500	34,500	26
PEDRO MIGUEL.				
231	....	60,308	60,308	25½

BEST RECORD FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
228	Empire	May 29	Rock	2,459
228	Empire	May 31	Rock	2,441
228	Empire	May 4	Rock	2,430
203	Culebra	May 6	Rock	3,135
227	Culebra	May 14	Rock	3,002
227	Culebra	May 11	Rock	2,907
203	Culebra	May 9	Rock	2,850
231	Pedro Miguel	May 27	Rock	2,982

Fourth of July Events.

The program for the field events and the aquatic sports at the Fourth of July celebration at Ancon and Balboa has been arranged, as follows:

FIELD EVENTS, ANCON—9.30 A. M.

One hundred yard dash (preliminaries and finals); 75-yard dash—for boys; sack race; 100-yard low hurdles; running high jump; 220-yard run; potato race; fat man's race (75 yards, 200 pounds minimum weight); 12-pound shot put; running broad jump; equipment race (Marines and Tenth Infantry); 440-yard run; boys' relay 75, yards, 4 boys in each team; 880-yard run; wall-scaling contest. (Marines and Tenth Infantry) three-legged race; tug-of-war (eight men on a team); one mile relay (four men on a team).

An entrance fee of 50 cents must accompany each entry blank, this fee to be returned if the person competes. The events marked (*) are regular events, all others are special events. No one entered in the regular events can compete in the special events. In all events, except the "Tug-of-war," "Equipment race," and the "Wall-scaling contest," the prizes will be gold, silver, and bronze medals. A prize of $40 will be given the winning tug-of-war team. The age limit of boys will be 16 years, and entry must be signed by parent or guardian. Boys will not be allowed to compete in the special events. All entries accompanied by fees must be sent to R. L. Dwelle, clerk of course, care of Commission clubhouse, Gatun, C. Z. Entries to the above events will close on June 22.

AQUATIC SPORTS, BALBOA—3.30 P. M.

3.30. Lifeboat race, (distance, three-fourths mile), six-oared and coxswain, prizes: $25 and $15 (three or more entries.) 3.40. Four-round aquatic boxing contest, A. A. U. rules, prizes: $15 and $10 (four or more entries.) 3.45. Gasoline boat race, second-class (below 10 horsepower), distance, 3 miles, prizes: $20 and $10 (three or more entries.) 3.50. Swimming contest for men, distance, 100 yards, gold, silver, and bronze medals. 4. Panga race (distance half-mile), two-oared and coxswain, prizes: $15 and $10 (three or more entries.) 4. Swimming contest for boys (age limit 15 years), distance, 100 yards, prizes: gold, silver, and bronze medals. 4.10. High diving contest, prizes: $25 and $15 (five or more entries). 4.15. Gasoline boat race, first-class (10 horsepower and up), distance, 3 miles, prizes: $20 and $10 (three or more entries). 4.20. Log rolling contest, prize: $10. 4.30. Duck hunt, prize: $10. 4.30. Relay swimming contest, four-men teams, distance, 200 yards, prizes: gold medals. 4.45. Fancy diving contest. prize: gold medal. 4.50. Tub race (with paddles), distance 100 yards, prizes $10 and $5 (three or more entries.) 5.00 Obstacle swimming contest, prizes: $15 and $10 (three or more entries.) 5.10. Greased horizontal spar (60 feet,) winner to leave lighter and get flag from end of spar, prize: $15. 5.15. Exhibition fire and lifeboat drill (tugs *Bolivar*, *La Boca*, *Miraflores*, *and Cocoli*.) Fire drill must be completed before lifeboat drill is commenced. Lifeboat must be put in water and vessel cleared, prize: $25.

An entrance fee of 25 cents will be collected, which will be returned to contestants after the events. All entrance fees should be forwarded to Mr. J. E. Siler, Balboa, C. Z.

Odd Fellow Memorial Services.

The annual memorial service of the Independent Order of Odd Fellows will be held at the Commission chapel, Empire, on Sunday evening, June 16, at 7.30 o'clock. An appropriate program will be given in which Mrs. McLean, Mrs. Hudson, Mrs. Willson, Mrs. Storing, Miss Smith, and Messrs. Dohrman and Skinner will take part. The Rev. J. L. Wise will preach on the friendship of David and Jonathan. The service was organized and will be carried out under the auspices of Canal Zone Lodge, No. 3, Empire, although it is desired that members of all the Zone lodges attend. There are lodges at Cristobal, Gorgona, Empire, Culebra, and Ancon, with an auxiliary at Gorgona. The total membership is about 400.

Odd Fellow Election.

At the meeting of Pacific Lodge, No. 4, I. O. O. F., held on Thursday evening, June 6, officers were elected for the ensuing six months, as follows: Noble grand, Olen E. Granberry; vice-grand, E. M. Keyser; secretary, A. F. Holzaphel; treasurer, A. S. Curtis.

Burning of the Launch "Cathandre."

The launch *Cathandre*, in the service of Messrs. Pinel Brothers, Panama, was destroyed by fire about six miles from the mouth of the Bayano River on Sunday morning, June 9. Of the party of 13 Americans who were on board, bound for the Bayano River, 12 were picked up by the *Cava*, at the mouth of the Chico River on Monday afternoon, they having escaped from the burning launch in two small boats. The one missing man is Jos. B. Brenner, an employe of the cold storage department of the P. R. R. commissary.

SOCIAL LIFE OF THE ZONE.

Dancing a Popular Diversion.

That dancing is one of the most popular forms of amusement in the Canal Zone is evidenced by the number of clubs holding regular dances in the Canal villages, and, in addition, special dances are given by orders and societies, clubs, and private residents.

Of the organizations solely for dancing, the Tivoli club is the oldest and the largest. It has its dances at the Hotel Tivoli on the second and fourth Saturday evenings in each month. The Tivoli club has members from Camp Otis and Camp Elliott, Empire, Culebra, Ancon, and Panama. The guests of the hotel are always included as guests of the club at its dances.

The Culebra dancing club meets once a month. At Empire, four dancing clubs hold regular meetings; the Wizards and the Ramblers have dances twice in the month at the Commission clubhouse; the Kangaroos hold one dance a month at their hall, and the Catholic club has one dance a month in the parish house connected with St. Ferdinand's Church.

Gorgona has one dancing club, with one dance monthly at the clubhouse. In Gatun, there are the Gatun club, with one dance a month, the Lock City club, with dances at irregular periods, and the "H2O" club, which also has frequent dances.

Cristobal has the Cristobal dancing club, with meetings at the clubhouse once a month, and Colon has the Strangers club, one of the oldest on the Isthmus, which has a dance in the clubhouse once a month, and the Colon club, which has a dance at the Lincoln House once a month.

At Paraiso, Bas Obispo and Las Cascadas, dances are held by clubs and societies.

Church Notes.

Hereafter, the Woman's Altar Guild of St. Luke's Hospital Chapel, Ancon, will hold its meeting on the first Tuesday in each month at the Hotel Tivoli, at 9.30 a. m.; the second meeting in each month will be held on the fourth Tuesday, as usual, at the home of a member. Mrs. Charles W. Barber will entertain the guild on June 18, at 3.30 p. m. Beginning with July 1, the monthly dues will be reduced to 10 cents, this being in conformity with the custom of societies of a similar nature in the United States.

The monthly meeting of the Woman's Altar Guild of Christ Church, Colon, was held on Tuesday, June 4. The Rev. H. Page Dyer, visiting missioner, celebrated at the corporate communion of the society. The guild is planning to place a marble altar in Christ Church, as a permanent memorial of its work in Colon.

There was a special service of the Union Church in the schoolbuilding, Culebra, on Sunday evening, June 9. In the absence of the chaplain, Judge J. B. March of Gorgona, delivered an address.

The semiannual election of officers for the Culebra Christian League, which was held in the chapel on Thursday evening, June 6, resulted, as follows: President, Mr. A. F. Warner; vice-president, W. E. Hoffman; secretary, F. A. Gould; treasurer, R. W. Bechlem; usher, D. T. Dorraly; chorister, G. R. D. Kramer. Several members were elected "at large" for special office. The work of the league is prospering.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M'THS.	CULEBRA SECTION.*								CHAGRES SECTION.**				
	1905.	1906.	1907.	1 08.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.
Jan ..	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	1,416,035	169,447	389,399	175,802	255,385	28,357
Feb ..	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	1,349,569	200,145	450,182	286,309	219,550	66,145
March	132,840	239,178	815,270	1,290,885	1,434,597	1,509,728	1,728,748	1,539,618	324,233	619,491	484,846	297,339	172,607
April .	125,749	213,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	329,483	510,020	428,777	102,103	171,731
May....	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	1,405,760	235,902	386,170	248,974	29,783	12,524
June ..	76,905	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	....	322,145	275,900	164,389	32,288	....
July ..	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	....	345,757	233,897	166,106	22,284	....
August	49,210	244,823	786,866	1,171,927	1,173,370	1,377,714	1,442,402	....	368,683	231,543	234,404	21,892	....
Sept ..	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	1,340,173	....	346,948	235,818	234,290	21,272	....
Oct ...	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	1,306,971	....	424,911	221,409	271,409	12,216	....
Nov....	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	....	336,390	93,619	260,882	12,248	....
Dec...	70,630	307,689	1,025,485	1,210,046	1,152,022	1,211,400	1,351,082	....	383,948	105,044	197,481	10,809	....
Totals	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	16,596,891	7,166,198	3,787,992	3,752,492	3,153,669	1,037,169	451,364

MONTHS.	ATLANTIC DIVISION.†					PACIFIC DIVISION.¶									
	GATUN LOCKS, DAM AND SPILLWAY.††					PEDRO MIGUEL LOCKS.‡					MIRAFLORES LOCKS, DAMS AND SPILLWAY.‡‡				
	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.
January...	292,155	102,690	125,011	65,889	1,330	....	83,726	27,320	15,690	24,969	7,203	61,202	31,479	48,744	95,609
February.	282,797	95,031	123,738	50,511	1,2[illegible]8	....	58,242	9,486	6,809	18,480	39,046	53,689	15,300	12,936	47,426
March....	374,598	90,051	132,007	51,431	254	....	95,624	6,784	674	1,777	73,194	51,417	18,184	72,739	28,352
April	373,456	70,009	103,243	12,548	27,134	....	101,365	9,129	255	13,269	98,943	60,060	12,148	79,751	29,094
May......	266,747	52,786	82,958	17,677	....	....	57,523	10,405	5,905	26 018	73,023	47,588	20,250	57,975	13,096
June.....	244,951	36,556	88,088	4,840	....	13,228	70,971	8,420	7,454	....	68,691	55,653	21,994	38,023	....
July	213,359	39,058	95,503	6,897	....	22,648	77,503	4,410	6,273	....	104,369	50,999	11,990	97,884	....
August	188,262	40,346	99,737	22 558	....	22,217	58,025	12,789	220	....	94,248	35,446	17,548	102,249	....
Sept'mber	145,990	49,945	103,040	3,489	....	28,833	48,825	10,405	3,472	....	90,923	31,803	8,590	96,112	....
October..	154,064	57,321	118,327	112	....	48,875	39,002	7,433	5,365	....	74,700	25,349	9,850	107,790	....
November	118,278	63,452	94,552	....	....	55,401	20,207	10,636	12,962	....	52,930	18,644	9,400	84,894	....
December	119,904	96,590	72,030	....	....	65,578	28,342	11,195	17,320	....	69,650	20,083	17,906	79,480	....
Totals	2,774,561	793,835	1,238,234	235 952	29,9[illegible]6	256,780	739 355	128,412	82 399	84,513	946,920	511,933	194,639	878,577	213,577

*Total to June 1, 1912, 80,669,022 cubic yards. Excavated in 1904, May to December 243,472 cubic yards.

**Total to June 1, 1912, 12,375 455 cu. yds., of which 192,769 cu. yds. were removed in 1907, 188,239 cu. yds. were removed by sluicing.

†Dry excavation at Mindi Hills began in July, 1907. There were excavated 172 851 cubic yards, 1907; 590,955 cubic yards 1908; 713,015 cubic yards, 1909; 662,995 cubic yards, 1911; 56, 382 cubic yards, 1912; total to June 1, 2,196 198 cubic yards.

¶There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 1,182,058 cubic yards at different points in prism to June 1, 1912. There were also 172 cubic yards removed by steamshovels outside of prism during October, 1908.

††Total to June 1, 1912, 6,439,3[illegible]5 cubic yards: in this total are included 26,628 cubic yards excavated October to December, 1906, and 1 340,179 cubic yards in 1907.

‡Total to June 1, 1912, 1,291,495 cubic yards. ‡‡Total to June 1, 1912, 2,645,646 cubic yards.

WET EXCAVATION.

MONTHS.	ATLANTIC DIVISION.†						PACIFIC DIVISION.††							
	ATLANTIC ENTRANCE.§						PACIFIC ENTRANCE.§§							
	1907.	1908.	1909.	1910.	1911.	1912.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.
January...	111,100	490,701	521,050	510,055	520,181	520,228	....	95,940	94,710	460,250	469,529	518,936	379,810	412,118
February ..	110,002	427,722	444,910	493,448	455,318	581,399	....	95,940	93,480	663,519	671,477	285,791	386,866	432,796
March.....	84,145	546,886	461,208	412,325	391,736	103,373	....	116,820	92,319	783,281	865,696	462,588	639,761	404,939
April.......	69,889	496,366	470,635	190,574	492,579	134,261	....	110,700	104,855	676,539	731,767	534,322	439,622	383,995
May	133,847	564,386	315,370	447,578	514,178	229,626	....	112,340	122,157	530,466	720,753	484,509	548,047	388,310
June	124,118	572,749	182,575	458,021	452,098	....	50,676	62,697	133,575	656,621	844,685	475,486	576,100	....
July	109,922	625,497	348,451	423,092	425,195	....	41,533	98,400	108,338	696,170	733,181	515,782	520,692	....
Augus	194,297	638,217	422,846	508,829	367,456	....	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....
September	403,842	624,776	410,574	451,873	420,434	....	114,308	105,780	153,975	750,080	662,976	473,585	534,667	....
October. ..	415,120	505,260	314,778	549,788	470,400	....	81,836	97,170	357,122	762,276	720,920	467,873	339,815	....
November	422,797	570,832	457,889	600,708	742,242	....	71,176	92,988	365,423	609,089	627,791	425,370	462,283	....
December	442,835	679,604	489,121	482,370	533,409	....	71,094	90,528	349,551	729,960	727,460	387,034	278,960	....
Totals.....	2,621,914	6,742,996	4 839 407	5 528,661	5,785,226	1,568,887	485 153	1 191 233	2,143 789	8,056,025	8,399,498	5,538,745	5,736,864	2 022,158

†Dredges removed 38,425 cubic yards at Gatun Dam site in 1907, and 1,283,671 cubic yards at Gatun Locks in 1908, 1909, and 1912, of which 2[illegible]0,530 was removed in May, 1912.

††Excavated at Miraflores Locks 309 647 cubic yards in 1909; 156,125 cubic yards in 1910; 176,578 cubic yards in 1911; total 642,350 cu. yds.

§Total to June 1, 1912, 28,514 556 cu yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906

§§Total to June 1, 1912, 33,573,465 cubic yards. Of this amount, 1,019,597 yards were removed by monitors.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.†			PEDRO MIGUEL LOCKS.††			MIRAFLORES LOCKS.‡		
	1910.	1911.	1912.	1910.	1911.	1912.	1910.	1911	1912.
Jan..............	54,136	72,919	34,983	16,273	38,513	15,077	......	24,01[illegible]	48,416
Feb..............	55,696	72,103	26,664	13,218	37,011	12,639	146	20,89[illegible]	63,893
March	60,998	86,884	27,532	18,793	44,716	9,331	314	31,17[illegible]	83,706
April............	63,227	67,361	11,600	24,522	28,635	9,460	13	38,758	97,735
May..............	74,273	67,844	7,746	29,576	19,135	10,736	27	36,154	92,095
June	89,401	55,305	....	30,631	18,243	....	1,603	26,536	....
July	84,001	71,046	....	41,464	19,906	....	3 672	32,840	....
Aug..............	85,686	66,928	....	51,264	20,736	....	6,030	57,003	....
Sept.............	76,720	57,298	....	50,702	15,379	....	18,133	56,083	....
Oct..............	86,949	53,636	....	61,422	25,637	....	22,159	60,873	....
Nov..............	75,152	43,907	....	64,248	19,622	....	23,871	41,726	....
Dec..............	80,212	43,590	....	42,834	14,360	....	21,533	48,772	....
Total.........	886,451	758,821	108,525	444,947	301,893	57,243	97,501	474,832	385,845

Spillway, Gatun Dam, March 17, 1909—June 1, 1912, 2[illegible]0,391 cu. yds.
Miraflores Dam, to June 1, 1912, 321 cubic yards.
†116,072 cu. yds in 19 9. ††33,856 cu. yds in 1909. ‡102 cu. yds in 1909

FILL PLACED IN DAMS.

M'THS.	GATUN.*				PEDRO MIGUEL.†		MIRAFLORES.‡			
	1911.		1912.		1911.	1912.	1911.		1912.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan...	211,992	218,690	173,900	239,266	......	38,044	89,243	24,685	....	24,920
Feb..	301,733	211,008	211,399	145,221	......	35,153	87,335	32,404	....	26,475
Mar..	342,800	255,047	242,874	229,059	......	86,252	25,131	23,940	....	24,570
April	368,658	205,130	204,189	286,956	......	67,385	14,100	67,260	....	26,292
May..	419,348	207,751	194,733	227,017	......	21,782	18,353	30,032	....	31,220
June.	432,008	227,996	....	....	......	......	53,858	28,315	....	....
July..	324,947	201 996	....	....	14,865	......	24,957	54,415	....	....
Aug..	259,389	232,426	....	....	24,812	......	25,000	72,203	....	....
Sept.	261,838	194,497	....	....	4,052	......	6,409	34,480	....	....
Oct..	214,320	218,305	....	....	3,400	......	7,130	37,250	....	....
Nov .	266,603	207,157	....	....	3,190	......	14,370	31,800	....	....
Dec..	89,752	233,063	....	....	7,350	......	....	23,730	....	....
T'tal	3,493,388	2,613,066	1,027,095	1,127,519	57,669	248,616	366,336	460 514	....	133,477

*Wet fill to Jan. 1, 1911, 5,833,076 c. y.; Dry fill to Jan. 1, 1911, 6,128,105 c. y.
†Dry fill to Jan. 1, 1911, 260,852 c. y.
‡Wet fill to Jan. 1, 1911, 294,712 c. y. Dry fill to Jan. 1, 1911, 609,863 c. y;

CANAL EXCAVATION TO DATE.

By French Companies		78,146,960
French excavation useful to present Canal		29,908,000
By Americans—		
Dry excavation	106,689,339	
Dredges	64,240,706	
Total		170,930,045
May 4 to December 31, 1904	243,472	
January 1 to December 31, 1905	1,799,227	
January 1 to December 31, 1906	4,948,497	
January 1 to December 31, 1907	15,765,290	
January 1 to December 31, 1908	37,116,735	
January 1 to December 31, 1909	35,096,166	
January 1 to December 31, 1910	31,137,677	
January 1 to December 31, 1911	31,603 899	
January 1 to May 31, 1912	12,919,082	

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation	8,635,533	38,472,185	*135,386	8,755,637
Dredges	29,836,652		8,891,023	
Central—				
Culebra Cut	80,669,022	93,044,477	8,774,983	8,756,819
All other points	12,375,455		*18,164	
Pacific—				
Dry excavation	5,197,568	39,413,383	1,734,512	6,880,878
Dredges	34,215,815		5,146,366	
Grand totals		170,930,045		24,393,334

*Estimate exceeded by this amount.

COLON BREAKWATER.

Double Track Trestle Now Driven to Within 700 Feet of the End.

On June 1, the double track trestle on the west breakwater at the Atlantic entrance to the Canal had been extended a distance of 10,895 feet from land, leaving about 700 feet still to be constructed. Owing to long delays due to lack of piling, the fill in the remaining part will be brought up to—15 feet, by dumping dredged rock from scows. A single-track trestle will then be built for the remaining distance and Porto Bello armor rock dumped from it to 5 feet above sealevel. At the end of May, 800,838 cubic yards of material, excavated by the steamshovels working in the quarries on Toro Point, had been dumped on the breakwater; a total of 1,070,888 cubic yards had been dumped by dredges, and 57,768 cubic yards of large rock from the Porto Bello quarry had been placed. This latter work is proceeding slowly on account of the lack of lidgerwood cars at Porto Bello. The equipment now in use at that point is all narrow gage which was used in furnishing crushed rock. It is expected that a number of lidgerwoods will be released in the Central Division, and with one or two additional steamshovels, the output at Porto Bello can be materially increased. The second of the two derrick barges, built at Cristobal dry dock especially for placing large rock on the breakwater, has been practically completed. The design and method of constructing these barges were described in THE CANAL RECORD of May 24, 1911. The first barge was launched on July 15, 1911, but has never been placed in service, because the large stone had not been supplied in sufficient quantities to justify it. At the present time, large rock is lifted from the transportation barges to a train of lidgerwood cars, by cranes, and then plowed off on the breakwater. The new derrick barge will be placed in commission as soon as the rock shipments are increased. As the sea will seldom be calm enough for the barges to be stationed on the seaward side of the breakwater, it is proposed to remove the inside half of the trestle when the fill has been made, thereby allowing them to draw close and place the rock on the outer toe of the embankment from the harbor side.

Naos Island Breakwater.

To hasten the construction of the Naos Island breakwater, two piledrivers at work on the double track trestle have been placed on 12-hour shifts, as a result of which the end of the trestle is advancing toward the island about a third more rapidly than before. About 13,800 feet of the trestle have been driven, and about 2,000 feet remain to be placed. The fill at present is being made with average of five trains of rock a day from Culebra Cut. The number of trains will probably be increased. The committee, which recently reported on the advisability of changes in the method of construction, recommended that the plans followed since last October be carried to completion, but that the rate of operation be accelerated.

A Double Joint Debate.

At a meeting of the Cristobal debating club, held on Wednesday, June 5, it was decided to challenge the Gorgona debating club to a joint debate, to take place on or about June 26, in which each society shall appoint two teams, one to debate on one side of the subject at the clubhouse in one town, and the other to debate on the opposite side at the clubhouse in the other place, both on the same date. Each team is to consist of two men. The subject will be chosen by the club challenged.

In the article on the fifth anniversary of the Commission clubhouses, published in THE CANAL RECORD of June 5, it was stated that the membership of the clubhouses at the end of April was 2,091. The number should have read 2,001.

Postal Business and Canal Zone Revenues.

The total value of money orders issued in the Canal Zone during the month of April was $363,717.54, of which $292,427.19 was issued payable in the United States, $70,412.07 in the Canal Zone, $643.88 in Martinique, and $234.40 in Costa Rica. The number of orders issued was 17,940, and the average value was $20.27. Money order fees amounted to $1,739.76, and the amount paid and repaid was $104,963.46. Postal sales amounted to $6,930, and newspaper postage to $12.38.

Revenue collections during the month of April were, as follows: Bicycle and chauffeur licenses, $37; insurance collections, $571.85; motor vehicle licenses, $59; steamboat inspection, $1,280.65; taxes, licenses, etc., $9,003.54, making a total of $10,952.04.

Close of Canal Zone Schools.

The seventh year of the Canal Zone public schools will close on Friday, June 28. On the evening of the same day the commencement exercises of the high school will be held in the Gatun clubhouse at 8 o'clock. Judge Thomas E. Brown, Jr., will deliver an address. On Sunday morning, June 30, Maj. Henry A. Brown will deliver a sermon to the graduates at the clubhouse.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending June 8:

DATE.	Hours worked.	Cubic Yards.
June 3	6.10	2,376
June 4	7.00	2,547
June 5	8.35	3,233
June 6	7.55	2,981
June 7	7.25	2,851
June 8	8.05	2,527
Total	45.10	16,515

St. John's Day Banquet.

The members of the committee on arrangements for the Masonic banquet to be given at the International hotel, Panama. on Sunday evening, June 22, are requested to meet at Ancon hall on Saturday night, June 15, and be prepared to report definitely as to the number of tickets sold. As final arrangements for the banquet are to be made at this meeting, a large attendance is desired.

Rifle Matches.

The Canal Zone Rifle Club held a special match on the Caimitillo range at Pedro Miguel, on June 2, for a trophy offered by Mr. Gill, vice-president of the club. Two ranges were shot—200 yards rapid fire on "A" target, and 600 yards slow fire on "B" target. Mr. W. L. Greene of Pedro Miguel won the match with scores of 40 and 42, respectively.

Another match is planned in the near future for the championship of the club. This match will be more comprehensive than anything yet held, consisting of 300 and 500 yards rapid fire; 600 and 1,000 yards slow fire, and a skirmish run.

A special match will be held on June 30, open to all white riflemen on the Isthmus, the first of a series of sporting match shoots to determine the best shot on the Zone. Standing and running deer shoots at unknown distances, as well as rapid fire, will make up the matches. An entry fee of 50 cents will be charged to cover expense of special prizes. Information may be procured from G. C. Ferris, secretary, Pedro Miguel.

Postal Savings Bank.

A statement of Canal Zone postal savings bank transactions at Canal Zone post-offices for the period of April 1, to April 27, follows:

Name of Office.	Postal Savings Certificates Issued	Postal Saving Certificates Paid.
Ancon	$7,122.00	$2,837.00
Balboa	6,853.00	4,337.00
Bas Obispo	310.00	120.00
Corozal	10,696.00	3,462.00
Cristobal	6,689.00	4,448.00
Culebra	8,981.00	2,731.00
Empire	6,873.00	1,943.00
Gatun	11,547.00	4,094.00
Gorgona	17,461.00	9,561.00
Las Cascadas	8,325.00	4,249.00
Matachin	649.00	80.00
Miraflores	4,228.00	1,436.00
Paraiso	3,754.00	1,682.00
Pedro Miguel	17,933.00	7,842.00
Cristobal, Sta. "A"	585.00	50.00
Cristobal, Sta. "B"	762.00	145.00
Total	$112,768.00	$49,017.00

United Fruit Company's Sailings to England.

The United Fruit Company announces the following sailings to Liverpool, England: *Heredia*, June 29; *Sixaola*, July 12; *Cartago*, July 27. The time of the voyage will be 16 days, including a stop at Jamaica.

Obituary.

Carl Fondren of the *U. S. S. Maryland* died at Ancon Hospital, on June 2, after an illness of a little over three months. He was 24 years of age, single, and is survived by his father, W. E. Fondren of Garner, Texas.

I. B. of S. S. and D. M.

Local No. 19, I. B. of S. S. & D. M., will hold its regular meeting on Sunday, June 16, at 12.15 p. m., at the Empire lodge hall. All members are requested to attend.

A. EDMONSON,
Secretary and Treasurer.

Empire, C. Z., June 6, 1912.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration building, Ancon, on June 19. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration building at 8 a.m., on June 19, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their ability properly to operate an automobile, and must have the automobile with them.

OFFICIAL CIRCULARS.

Acting Examiner of Accounts.

CULEBRA, C. Z., June 5, 1912.

CIRCULAR No. 450:

Effective June 6, 1912, Mr. J. H. McLean will act as Examiner of Accounts during the absence of Mr. T. L. Clear.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Annual Reports for Fiscal Year.

CULEBRA, C. Z., June 8, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

It is desired that annual reports for the fiscal year ending June 30, 1912, be in this office not later than August 1, and it is directed that you be governed accordingly. Reports will be submitted in quintuplicate, on the same size and kind of paper as that on which these instructions are written.

H. F. HODGES,
Acting Chairman and Chief Engineer.

New P. R. R. Time Table.

CULEBRA, C. Z., June 8, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

The General Superintendent of the Panama railroad advises that a new time table, No. 12, will go into effect at 12 01 a. m., Wednesday, June 12, 1912, and that copies of the same will be furnished to all concerned in ample time.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Fourth of July Celebration Subscriptions.

ANCON, C. Z., June 7, 1912.

TO HEADS OF DEPARTMENTS AND DIVISIONS:

The finance committee of the Fourth of July celebration, of which Mr. E. J. Williams is chairman, and the chief timekeepers of the different departments and divisions are members, has been furnished with the necessary subscription blanks, etc., for the purpose of raising funds for this year's Fourth of July celebration, and your cooperation is respectfully requested by the Fourth of July committee in authorizing and affording the representative of your department or division on the finance committee every assistance in obtaining subscriptions from all American employes in your department or division.

H. H. ROUSSEAU,
Chairman, Executive Committee,
1912 Fourth of July Celebration.

Acting Local Auditor.

PANAMA RAILROAD COMPANY,
OFFICE OF GENERAL SUPERINTENDENT.
COLON, R. P., June 8, 1912.

CIRCULAR No. 115:

All concerned: During the absence, on leave, of Mr. R. W. Hart, local auditor, effective June 9, 1912, Mr. M. L. Duff is appointed acting local auditor.

J. A. SMITH, *General Superintendent.*

Canal Zone Liquor Licenses.

ANCON, C. Z., June 7, 1912.

By authority of the Acting Chairman of the Isthmian Canal Commission, the following applicants will be granted licenses for the retail sale of intoxicating liquors in the Canal Zone, for the year commencing July 1, 1912:

Culebra.

Vicente Camanes E.
Lee Hop
Francisco Wong
Wo Chan
Ho Chong & Leon Chow
Chong Jan
Ho Kwong
William G. Bell

Empire.

Mezele Gustave
Manuel Leones
José Sandi
Lai Hing & Co.
Vicente Ansola
Chee Hing
Chong Tai
Yuen Chong
Wing Wo
Wai Loy
Curtis A. Brothers
Antonio Sun
Joaquin Yun Sang

Matachin.

Lai Wo
Agapito Centeno
Kwong Sang
Mat Go
Tai Fan

Gorgona.

Esteban Duran
Jacob Kowalsky
Antonio Mas
George Andrade

Gatun.

Pedro Grau
Wing Kee
Yee Kee
Dario Rodriguez
John B. Schuetz
Julien Joly
Prudencio San Martin
William Enoch Thibou

TOM M. COOKE, *Collector of Revenues.*

The following ships arrived at, or departed from the port of Balboa, during the week ending June 8:

Arrivals—June 1, *Stanley Dollar*, from San Francisco, June 3, *Mantaro*, from Callao; June 5, *Peru* (P. S. N.) from Guayaquil; June 5, *Pleiades*, from San Francisco; June 5, *Aysen*, from Valparaiso; June 6, *Queen Helena*, from San Francisco; June 6, *Santa Rita*, from San Francisco; June 8, *Ecuador*, from Guayaquil.

Departures—June 3, *Chile*, to Guayaquil; June 3, *Guatemala*, to Valparaiso; June 3, *Ucayali*, to Callao; June 4, *Presidente Sarmiento*, to Tahiti; *Barracouta*, to Central America; June 5, *Quito*, to Tumaco; June 8, *Kansas City*, to San Francisco; June 8, *Santa Rita*, to San Francisco; June 8, *Queen Helena*, to San Francisco.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Culebra, C. Z., Sunday, June 16, 1912, at 4.45 p. m. The program follows:

1. March—*Joe Weber*....................Appelles
2. Selection—*The Paradise of Mahomet*............ Planquette & Ganne
3. Waltz—*The Wedding of the Winds*........Hall
4. Overture—*Hungarian Lustspiel*......Keler Bela
5. Idyl—*Softly, Unawares*..................Lincke
6. Potpourri—*German Liederkranz*..........Tobani
7. *Sextet from Lucia*....................Donizetti
8. Selection—*The Pink Lady*................Caryll
9. March—*Take a Tip from Father*...Berlin & Snyder

CHAS. E. JENNINGS, *Musical Director.*

The next concert will be given at Corozal, June 23, at 5 p. m.

Married.

BOTTENFIELD-TEESE—At Warren, Pa., on Tuesday, May 21, Jane Richards, daughter of Mr. and Mrs. Robert W. Teese, to Mr. Francis Marion Drake Bottenfield. Canal Zone residence, Gatun.

Misdirected Letters.

ANCON, C. Z., June 8, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received at the office of the Director of Posts, and may be secured upon request of the addressees:

Adams, Mrs. H. M. (pkg.)
Benninger, M. P.
Bragg, C. L.
Carter, Charlie
Clarke, Joseph
Cox, Miss Mabel A.
Davis, Hugh W.
Drake, E. E.
Emerson, Mrs. Adaline
Falkner, W. H.
Ferreyros, Mrs.
Fleming, Andrew R.
Garrick, F. N.
Granton, S. H.
Hills, Fred C.
Horney, Sam
Jones, J. W.
Koronski, Dr. R. A. (pkg.)
Kimball, Miss M. Agnes
Lord, E. E.
McLean, Collins F.
Madole, W. J.
Marrott, Mrs. H. E.
Mitchell, J. C.
Moore, E. R.
Moss, Capt. James A.
O'Brien, James M.
Pardue, Sherman
Pearcy, Norman
Potts, F. A.
Richards, Miss Edith (2)
Rudd, Mrs. Richard
Severy, Frank J.
Shoesmith, Mrs. Anner
Slater, Ira L.
Tomey, Mrs. Wm.
Vaughan, J. J.
Wanger, G. A.
West, Rufus A.

PANAMA RAILROAD COMPANY.

PASSENGER TRAIN TIME TABLE No. 12—IN EFFECT JUNE 12, 1912.

STATION	Distance from Colon	SOUTHWARD.									
		Saturday only.		Sunday only					Daily Except Sunday.		
		73	71	29	27	25	23	21	7	5	3
Leave.		P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.
Colon	0	10.45	6.10	7.00	4.00	1.00	10.00	6.50	4.35	10.30	5.10
Mount Hope	1.57	s10.50	s6.15	s7.05	s4.05	s1.05	s10.05	s6.55	s4.40	s10.35	s5.15
Mindi	4.40	10.55	6.21	7.10	4.10	1.10	10.10	7.01	4.46	10.41	s5.21
New Gatun	5.95	s11.01	s6.27	s7.15	s4.15	s1.15	s10.15	s7.07	s4.52	s10.47	s5.27
Gatun	6.78	s11.07	s6.33	s7.21	s4.21	s1.21	s10.21	s7.13	s4.58	s10.53	s5.33
Monte Lirio	14.50	s11.24	s6.50	s7.37	s4.37	s1.37	s10.37	s7.30	s5.15	s11.07	s5.50
Frijoles	20.99	f11.35	f7.01	f7.49	f4.49	f1.49	f10.49	f7.41	f5.26	f11.21	f6.01
Gorgona	33.55	A. M. s12.10	s7.35	s8.22	s5.22	s2.22	s11.22	s8.15	s6.00	s11.55	s6.35
Matachin	32.14	s12.15	s7.40	s8.27	s5.27	s2.27	s11.27	s8.20	s6.05	s12.00	s6.40
Bas Obispo	33.07	s12.20	s7.45	s8.31	s5.31	s2.31	s11.31	s8.25	s6.10	P. M. s12.05	s6.45
Las Cascadas	34.68	s12.27	s7.52	s8.36	5.36	2.36	s11.36	s8.32	s6.17	s12.12	s6.52
Empire	36.97	s12.34	s7.59	s8.37	s5.37	s2.37	s11.37	s8.39	s6.24	s12.19	s6.59
Culebra	37.96	s12.39	s8.04	s8.44	s5.44	s2.44	s11.44	s8.44	s6.29	s12.24	s7.05
Paraiso Jct.	41.83	s12.47	s8.12	f8.57	f5.57	f2.57	f11.57	f8.52	6.37	12.32	7.14
Pedro Miguel	42.21	s12.49	s8.14	s8.59	s5.59	s2.59	s11.59	s8.54	s6.39	s12.34	s7.16
Miraflores	43.72	s12.54	s8.19	s9.04	s6.04	s3.04	P. M. s12.04	s8.59	s6.44	s12.39	s7.21
Corozal	46.22	s1.01	s8.26	s9.11	s6.11	s3.11	s12.11	s9.06	s6.51	s12.46	s7.27
Diablo	46.90	f1.03	f8.28	f9.13	f6.13	f3.13	f12.13	f9.08	f6.53	f12.48	f7.29
Panama	49.13	1.10	8.35	9.20	6.20	3.20	12.20	9.15	7.00	12.55	7.35
Arrive		A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	P. M.	P. M.	A. M.
s. Stop. f, Flag		73	71	29	27	25	23	21	7	5	3

STATION.	Distance from Colon.	NORTHWARD.											
		Daily except Sunday				Sunday only.					Sunday only.	Saturday only.	Sunday only.
		2	4	6	8	20	22	24	26	28	30	72	74
Arrive.		A. M.	P. M.	P. M.	P. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	P. M.	A. M.
Colon	.00	9.00	12.45	3.55	7.50	9.05	12.15	3.15	6.15	9.15	12.35	9.55	2.25
Mount Hope	1.57	s8.55	s12.40	s3.50	s7.45	s9.00	s12.10	s3.10	s6.10	s9.10	s12.30	s9.50	s2.20
Mindi	4.40	s8.49	f12.34	3.44	f7.39	8.54	12.04	3.04	6.04	9.04	12.24	9.44	2.14
New Gatun	5.95	s8.45	s12.30	s3.40	s7.34	s8.49	P. M. s11.59	s2.59	s5.59	s8.59	s12.19	s9.39	s2.09
Gatun	6.78	s8.41	s12.27	s3.35	s7.29	s8.44	s11.55	s2.55	s5.55	s8.55	s12.15	s9.34	s2.04
Monte Lirio	14.50	s8.24	s12.11	s3.19	s7.12	s8.27	s11.40	s2.40	s5.40	s8.40	A. M. s12.00	s9.17	s1.47
Frijoles	20.99	f8.13	P. M. f11.59	f3.07	f7.01	f8.16	f11.29	f2.29	f5.29	f8.29	f11.49	f9.06	f1.36
Gorgona	32.55	s7.40	s11.26	s2.35	s6.28	s7.43	s11.00	s2.00	s5.00	s8.00	s11.20	s8.33	s1.03
Matachin	32.14	s7.33	s11.19	s2.28	s6.21	s7.36	s10.54	s1.54	s4.54	s7.54	s11.14	s8.25	s12.55
Bas Obispo	33.07	s7.29	s11.15	s2.24	s6.17	s7.32	s10.50	s1.50	s4.50	s7.50	s11.10	s8.21	s12.51
Las Cascadas	34.68	s7.23	s11.10	s2.19	s6.11	s7.26	s10.45	s1.45	s4.45	s7.45	s11.05	8.15	s12.45
Empire	36.97	s7.18	s11.04	s2.13	s6.06	s7.20	s10.38	s1.38	s4.38	s7.38	s10.58	s8.09	s12.39
Culebra	37.96	s7.12	s10.58	s2.07	s6.00	s7.14	s10.32	s1.32	s4.32	s7.32	s10.52	s8.03	s12.34
Paraiso Jct.	31.83	6.59	10.44	1.54	5.47	f7.04	f10.22	f1.22	f4.22	f7.22	f10.42	s7.52	s12.23
Pedro Miguel	42.21	s6.57	s10.42	s1.52	s5.45	s7.00	s10.20	s1.20	s4.20	s7.20	s10.40	s7.50	s12.21
Miraflores	43.72	s6.51	s10.36	s1.46	s5.39	s6.54	s10.16	s1.16	s4.16	s7.16	s10.36	s7.44	s12.16
Corozal	46.22	s6.44	s10.29	s1.39	s5.33	s6.48	s10.08	s1.08	s4.08	s7.08	s10.28	s7.38	s12.09
Diablo	46.90	6.41	f10.26	f1.36	f5.31	f6.46	f10.06	f1.06	f4.06	f7.06	f10.26	f7.36	f12.07
Panama	49.13	6.35	10.20	1.30	5.25	6.40	10.00	1.00	4.00	7.00	10.20	7.30	12.01
Leave.		A. M.	A. M.	P. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.
f. Flag. s. Stop.		2	4	6	8	20	22	24	26	28	30	72	74

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Miss Gay Zenola MacLaren will hold entertainments at the local clubhouses, and at Ancon hall, in Ancon, on the following dates: Corozal, Tuesday, June 18, return engagement; Empire, Monday, June 17, return engagement; Gatun, Friday, June 14, return engagement; Cristobal, Thursday, June 20, return engagement; Ancon, Saturday, June 29.

COROZAL.

Arthur Sims rolled the high score in tenpins during the past week. Score: 226. P. G. Flynn rolled the high score in duckpins—112. Eight teams, representing the various departments, are now bowling in a local tenpin tournament.

CULEBRA.

The Isthmian billiard tournament closed on Saturday evening, June 8. Messrs. Tragsdorf and Conlon of Culebra won from Messrs. Worster and Townsley of Gatun by the following scores:

Culebra.		Gatun.	
Tragsdorf	100	Worster	64
Conlon	100	Townsley	48

Messrs. Tragsdorf and Conlon will now play 1,000 points to decide the championship of the Isthmus.

Cristobal played Culebra at duckpins on Saturday night, June 8. Scores:

Culebra.				Cristobal.			
Sterns	80	94	81	Herrington	88	95	81
Lowande	84	94	98	Whittles	75	92	84
Brown	82	87	91	Collins	92	100	96
Crain	85	86	97	Claherty	83	91	81
Cornthwaite	83	84	90	Herring	94	88	90
Totals	414	445	457		432	466	432

Eight men can play on the handball courts at one time. Mondays and Wednesdays are the playing days. A tournament will be organized soon.

All men that desire to join the Culebra clubhouse track team should hand in their names to the secretary.

The Gatun duckpin bowling team will bowl at Culebra, Saturday evening, June 15.

EMPIRE.

The gymnasium classes have started again and will meet twice weekly. All interested see Mr. Russell. A fencing class was started Tuesday, June 11, under the direction of Mr. Russell. Nine men were present.

A handicap pool tournament has been started for the month of June. All wishing to enter leave names at the desk.

On Saturday, June 15, the Empire bowling team will bowl the Cristobal team.

Entry blanks may be secured at the office for the Fourth of July athletic meet, and the aquatic events.

GORGONA.

The following games of duckpins were rolled on the Gorgona alleys Saturday, June 8:

Gatun.				Gorgona.			
Wilson	76	80	86	Seebt	99	86	97
Mohen	75	84	76	M. Varen'p.	90	82	84
Harper	94	82	91	Denst	87	68	82
Curry	73			Robertson	85	97	85
Mack	86	82	83	Haggerty	124	100	87
Brennan		95	79				
Totals	404	423	415		485	433	435

At the meeting of the current topics club on Wednesday night, June 5, there was a discussion of the Alaskan question. The greater part of the 60 men present expressed themselves in favor of utilizing the Canal equipment for railroad building in Alaska.

Monday, June 3, a baseball membership campaign was organized with the following teams:

Team.	Manager.	Captain.
Tigers	Christensen	Hennen
Athletics	Hilty	Deavours
Giants	Charnley	Kinney
Reds	Reinhold	Carpenter
Phillies	Kuentz	Cogan
Pirates	Baldensperger	Emery
Senators	Lowe	Sundquist
White Sox	Bishop	J. Ridge
Red Sox	Ellington	Boster
Browns	Boyer	Lynch
Cubs	Keenan	Bornefield

The campaign will close June 30. Powell leads the individual batting average with 13 home runs, four three-base hits, three two-base hits. Deavours is second with five home runs, five three-base hits, one two-base hit. The "Red Sox" lead the league with the Cincinatti "Reds" in third place, and the Athletics in second place. Yearly new members count as home runs, renewals for one year, and new members for six months count as three-base hits, renewals for six months and new members for three months count as two-base hits, and renewals for three months count as one-base hits.

CRISTOBAL.

On Friday evening, June 14, Father Cooper of Christ Church, Colon will give an illustrated lecture on Guatemala. The lecture will be under the auspices of the literary and debating club. The date was changed to meet the convenience of Father Cooper. The lecture will begin at 8.15.

On Saturday evening, June 8, the Cristobal duckpin bowling team took two out of three games from the Culebra team on the local alleys. Scores:

Culebra.				Cristobal.			
Palmer	88	88	87	Barrett	85	120	104
Hill	86	108	86	Cotton	79	88	85
Mengel	88	86	93	Orr	99	84	89
Silver	115	81	77	Weston	81	86	88
Case	90	81	84	Louch	93	94	95
Total	467	444	427		437	472	461

The next and final contest will be held on the local alleys on Saturday evening, June 15, the team competing with Empire. A team from Cristobal will bowl at Empire.

GATUN.

Gatun won two out of three games of duckpins on Saturday night, June 8.

The final rehearsals of Sinbad the sailor are being held this week.

Rainfall from June 1 to 8, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	Ins.		Ins..
Ancon	.02	1–8	.04
Balboa	.56	6	.59
*Miraflores	.84	2	.85
Pedro Miguel	.44	8	.55
Rio Grande	.40	7	.98
Central Section—			
Culebra	.93	7	1.79
*Camacho	1.00	8	2.09
Empire	1.18	2	3.19
Gamboa	1.53	7	2.49
*Juan Mina	1.20	7	3.34
Alhajuela	1.16	3	3.70
*El Vigia	2.12	8	6.68
*Gorgona	2.50	7	3.74
*Frijoles	1.62	8	3.14
*Monte Lirio	1.20	4	3.68
Atlantic Section—			
Gatun	1.15	3	4.43
*Brazos Brook	1.92	8	5.41
Colon	2.52	3	4.51
Porto Bello	2.76	3	†5.55

*Standard rain gage—readings at 5 p. m., daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., June 7.

May Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Average	Years of Record	Rai'y days 1912
Pacific Section						
Ancon	9.89	11.04	10.71	8.98	14	14
Balboa	8.88	8.85	9.56	7.22	16	12
Miraflores	10.39	10.16	7.60	9.22	4	13
Pedro Miguel	13.24	9.57	6.92	10.59	5	14
Rio Grande	10.96	16.89	7.18	10.91	8	15
Central Section						
Culebra	10.50	14.86	8.15	11.16	21	15
Camacho	12.05	18.11	6.15	11.38	6	18
Empire	11.08	13.74	6.21	9.64	8	15
Gamboa	11.09	14.53	7.94	10.91	31	20
Juan Mina	......	15.90	10.86	13.38	2	17
Alhajuela	11.50	16.11	13.43	12.75	12	17
El Vigia	10.47	10.62	12.81	12.36	4	17
Gorgona	8.06	17.56	8.03	12.35	8	15
Frijoles	......	......	10.28	......	1	18
Trinidad	11.21	18.20	11.79	14.08	5	23
Monte Lirio	11.84	19.70	8.34	14.34	5	20
Atlantic Section						
Gatun	15.68	19.14	13.83	15.66	8	21
Brazos Brook	11.27	19.92	11.45	13.18	6	23
Colon	12.09	17.13	12.03	12.41	42	17
Porto Bello	9.30	19.25	16.65	15.18	5	22

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon, during the two weeks ending June 8:

Turrialba, May 25, from New York, with 372 pieces lumber, 94 pieces angles and channels, for Mechanical Division; 12 pieces steel plates, 5 cases packing, for stock.

Origen, May 27, from New Orleans, with 705 barrels paving brick, for Department of Civil Administration; 100 drums gasoline, 57,656 pieces lumber, for stock.

Allianca, May 27, from New York, with 4,325 pieces hollow tile, for Panama Railroad Company; 50 car wheels, 135 pieces lumber, 46 packages castings, for Mechanical Division; 50 bags tie plugs, 40 cases polish, 50 pieces maple lumber, 10 cases brushes, 970 kegs wire nails, 25 bundles hardware, for stock; and a miscellaneous cargo, the whole consisting of 5,820 packages, weighing 200 tons.

Prinz August Wilhelm, May 28, from New York, with 57 cases belting, for stock.

Belgian, May 28, from Liverpool, with 200 barrels carbolic acid, for stock.

Abungarez, May 30, from New Orleans, with 46 barrels road oil, 413 sacks dairy feed, 463 drums kerosene, 8 cases plumbing supplies, 27 pieces piling, 2,614 pieces lumber, for stock; 11,475 pieces lumber, for Mechanical Division.

Tivives, June 1, from New York, with 83 packages castings, for superintendent of erection; 12 barrels lead traps, for Panama Railroad Company; 15 bales rubber hose, 16 drums lime, 200 drums calcium carbide, 42 crates wire nails, 18 cases packing, 10 cases hardware, for stock; 147 pieces lumber, for Mechanical Division.

Grunewald, June 1, from Hamburg, with 17 cases castings, for superintendent of erection.

Colon, June 2, from New York, with 75 cases springs, for Atlantic Division; 80 barrels road oil, 120 pieces pipe, for Pacific Division; 250 car wheels, for Mechanical Division; 136 kegs rivets, 12 cases conduit, for Panama Railroad Company; 45 cases drugs and sundries, for Sanitary Department; 67 cases candles, 106 cases paint, 20 cases belt dressing, 185 kegs bolts and riverts, 50 barrels alum, 50 cases bronze cloth, 11 cases index paper, 13 cases wire, 255 pieces pipe, 1,200 kegs track spikes, 24 bales rubber hose, 120 kegs paint, 350 kegs nails, 614 reels wire, 67 barrels flour, 14 barrels molasses, 22 crates handles, for stock; and a miscellaneous cargo, the whole consisting of 4,300 packages, weighing 888 tons.

Sverre, June 3, from Bridgeton, with 15,000 cases dynamite, for stock.

Prinz Sigismund, June 3, from New York, with 2 1 cases safety fuse, for stock; 154 bundles bolts and washers, for fortifications; 34 cases bolts, for stock.

Hendon Holl, June 4, from New York, with 126,611 bags cement, for Pacific Division.

Zacapa, June 5, from New York, with 101 cases castings, for superintendent of erection; 17 packages hardware, 11 cases sheet zinc, six cases tape fuse, 236 pieces pipe, for stock.

Pleiodes, June 5, from San Francisco, with 1,755 bales hay, for stock.

Queen Helena, June 6, from Seattle, with 4,000 sacks oats, 53 pieces piling, for stock; 2,584 pieces redwood, for Mechanical Division.

Atenas, June 6, from New Orleans, with 11 bundles castings, 14,035 pieces lumber, for Mechanical Division. 147 bundles castings, for superintendent of erection; 25 cases lamp black, 13 cases castings, six cases tools, 65 pieces piling, 7,512 pieces lumber, for stock.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 19, 1912. (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
June 13	......	1.36	7.48	1.53	8.20
June 14	......	2.27	8.38	2.43	9.08
June 15	......	3.17	9.28	3.32	9.55
June 16	......	4.05	10.17	4.18	10.43
June 17	......	4.53	11.08	5.08	11.32
June 18	......	5.42	11.58	5.57	......
			P.M.		
June 19	12.22	6.32	12.50	6.49	......

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, June 8, 1912. All heights are in feet above mean sealevel:

DAY AND DATE.	STATION.				
	Vigia	Alhajuela	Gamboa	Bohio	Gatun Lake
Sun., June 2	126.2	92.6	44.8	25.1	25.1
Mon., June 3	132.8	97.5	50.4	25.6	25.5
Tues., June 4	130.7	97.0	50.4	26.0	26.0
Wed., June 5	128.8	94.6	46.6	26.3	26.3
Thurs., June 6	127.5	94.0	46.8	26.4	26.4
Fri., June 7	128.2	94.2	47.0	26.4	26.4
Sat., June 8	128.2	94.4	47.6	26.6	26.6
Height of low water to the nearest foot	125.0	91.0	44.0		

Sale of Public Buildings.

OFFICE OF CHIEF QUARTERMASTER,
CULEBRA, C. Z., May 31, 1912.

Sealed proposals will be received at this office until 3 p. m., Saturday, June 15, 1912, and then opened, for the purchase of any or all of eight buildings located at Bas Obispo and Gorgona. List of buildings and information will be furnished upon application to any of the district quartermasters, or at this office. Envelopes containing proposals should be endorsed "Proposals for purchase of buildings," and addressed to Col. C. A. DEVOL, Chief Quartermaster, Culebra, C. Z.

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Col. Geo. W. Goethals, U. S. A., Chairman, Culebra.

Col. H. F. Hodges, U. S. A., Culebra.

Lieut.-Col. D. D. Gaillard, U. S. A., Empire.

Lieut.-Col. Wm. L. Sibert, U. S. A., Gatun.

Civil Engineer H. H. Rousseau, U. S. N., Culebra.

Col. W. C. Gorgas, U. S. A., Ancon.

Mr. Maurice H. Thatcher, Ancon.

Mr. Joseph Bucklin Bishop,
Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

Headquarters, Culebra.

Col. Geo. W. Goethals, Chairman and Chief Engineer.

William Howard May, Secretary to the Chairman.

C. A. McIlvaine, Chief Clerk.

Ad. Faure, Chief Accountant.

H. S. Farish, Surveying Officer.

Col. H. F. Hodges, AssistantChief Engineer.

C. O. Carlson, Secretary.

Edward Schildhauer, Electrical and Mechanical Engineer.

Henry Goldmark, L. D. Cornish, T. B. Mönniche, Designing Engineers.

Walter F. Beyer, Assistant Engineer.

Civil Engineer H. H. Rousseau, Assistant to the Chief Engineer.

J. C. Parsons, Secretary.

Maj. T. C. Dickson, U. S. A., Inspector of Shops.

A. B. Nichols, Office Engineer.

Civil Engineer U S N., F. H. Cooke, Assistant Engineer

James G Craig, Senior Traveling Engineer.

D. E. Irwin, Junior Traveling Engineer.

Central Division.

Headquarters, Empire.

Lieut.-Col. D. D. Gaillard, Division Engineer.

W I Beam, Chief Clerk.

A. E. Bronk, General Inspector.

A. S. Zinn, Resident Engineer.

Mark W. Tenny, Assistant Engineer.

J. W. Sneed, Superintendent Construction.

J. M. Hagan, Superintendent Construction.

Joseph Little, Superintendent Construction.

W. T. Reynolds, Superintendent Construction.

A. Sessions, Superintendent Transportation.

William H Bates, Supt. Steam Shovel Repairs.

Dan E. Wright, Supt. Municipal Work and Pipe Lines.

Atlantic Division.

Headquarters, Gatun.

Lieut.-Col. Wm. L. Sibert, Division Engineer.

Maj. Chester Harding, U. S. A., Assistant Division Engineer.

Ben Jenkins, Chief Clerk.

Maj. J. P. Jervey, U. S. A., Resident Engineer.

Maj. G. M. Hoffman, U. S. A., Resident Engineer.

Geo. M. Wells, Office Engineer.

Pacific Division.

Headquarters, Corozal.

S. B. Williamson, Division Engineer.

John M. G. Watt, Assistant Division Engineer.

J. C. Keller, Chief Clerk.

W. G. Comber, Resident Engineer.

H. O. Cole, Resident Engineer.

Frank Cotton, Assistant Engineer.

H. D Hinman, Assistant Engineer.

W. L Thompson, Assistant Engineer.

James Macfarlane, Supt. of Dredging

Mechanical Division.

Headquarters, Gorgona.

A. L. Robinson, Superintendent

William Taylor, Chief Clerk.

Henry Schoellhorn, Mechanical Engineer.

Subsistence.

Headquarters, Cristobal.

Lieut.-Col. Eugene T. Wilson, U. S. A., Subsistence Officer.

Capt. Frank O. Whitlock, U. S. A., Assistant Subsistence Officer.

John Burke, Manager, Commissary Department.

W. F Shipley, Chief Clerk.

Quartermaster's.

Headquarters, Culebra.

Col. C. A. Devol, U. S. A., Chief Quartermaster.

Capt. R. E. Wood, U. S. A., Assistant Chief Quartermaster.

Lieut. Walter D. Smith, U. S. A., Constructing Quartermaster.

C. H. Mann, Chief Clerk.

Capt. C. Nixon, U. S. A., Depot Quartermaster, Mount Hope.

C. L. Parker, Assistant Depot Quartermaster, Mount Hope.

D. V. Dillon, Acting Storekeeper, Gatun.

R. K. Morris, Storekeeper, Gorgona.

D. H. Beaman, Storekeeper, Empire.

C. A. Gilmartin, Storekeeper, Miraflores.

X. D. Holt, Storekeeper, Balboa.

District Quartermasters.

B. C. Poole, Ancon and Balboa.

J. H. K. Humphreys, Corozal and Miraflores.

J. T. Smith, Pedro Miguel and Paraiso.

H. F. Sedwick, Culebra.

W. G. Ross, Empire.

J. M. King, Las Cascadas and Bas Obispo.

R. C. Shady, Gorgona.

R. M Gamble, Gatun.

Roy R. Watson, Cristobal, Toro Point, and Nombre de Dios.

Chas. D. Morgan, Porto Bello.

Civil Administration.

Headquarters, Ancon.

Maurice H. Thatcher, Head of the Department.

G. A. Ninas, Chief Clerk.

C. L. Luedtke, Assistant Chief Clerk.

Tom M. Cooke, Chief, Division of Posts, Customs and Revenues, Ancon.

Arthur McGown, Deputy Collector, Ancon.

Jno. L. Storla, Deputy Collector, Cristobal.

J. P. Fyffe, Chief of Police, Ancon.

Capt. Chas. W. Barber, U. S. A., Assistant Chief of Police, Ancon.

C. E. Weidman, Fire Chief, Cristobal.

Chas. F Koerner, Assistant Fire Chief, Ancon.

M. E. Gilmore, Supt. Public Works, Ancon.

J. J. Reidy, Asst. Supt. Public Works, Colon.

F. A. Gause, Superintendent of Schools, Ancon.

Edgar P. Beck, Treasurer of Canal Zone, Empire.

W. G. Comber, Chairman; James Macfarlane, C. J. Anderson, Board of Local Inspectors.

Canal Zone Judiciary.

Headquarters, Ancon.

Supreme Court—H. A. Gudger, Chief Justice.

Walter Emery, Clerk, Ancon.

Thomas E. Brown, Jr., Associate Justice.

William H. Jackson, Associate Justice.

Circuit Court, First Circuit—H. A. Gudger, Judge.

Walter Emery, Clerk, Ancon.

Circuit Court, Second Circuit—William H. Jackson, Judge.

Elbert M. Goolsby, Clerk, Cristobal.

Circuit Court, Third Circuit—Thomas E. Brown, Jr., Judge.

Nelson R. Johnson, Clerk, Cristobal.

M. C. Rerdell, District Judge, Cristobal.

S. E. Blackburn, District Judge, Ancon.

Edgar S. Garrison, District Judge, Empire.

J. B. March, District Judge, Gorgona.

Law.

Headquarters, Ancon.

Frank Feuille, Counsel and Chief Attorney.

William K. Jackson, Prosecuting Attorney.

Chas. R. Williams, Assistant Prosecuting Attorney.

A. A. Greenman, Land Agent.

Sanitation.

Headquarters, Ancon.

Col. W. C. Gorgas, Chief Sanitary Officer.

Lieut.-Col. John L. Phillips, U. S. A., Assistant Chief Sanitary Officer.

Maj. Robert E. Noble, General Inspector.

Harry E. Bovay, Chief Clerk.

Lieut. Col. Charles F. Mason, U. S. A., Superintendent Ancon Hospital, Ancon.

Surgeon Wm. H. Bell, U. S. N., Superintendent Colon Hospital, Cristobal.

Surgeon J. C. Perry, P. H. and M. H. S., Chief Quarantine Officer, and Health Officer, Panama.

Surgeon Claude C. Pierce, P. H. and M. H. S., Quarantine Officer, Colon.

Dr. Fleetwood Gruver, P. H. and M. H. S., Quarantine Officer, Panama.

Joseph A. LePrince, Chief Sanitary Inspector, Ancon.

Dr. M. E. Connor, Health Officer, Colon.

Disbursements.

Headquarters, Empire.

Edward J. Williams, Disbursing Officer.

Wm. M. Wood, Assistant Disbursing Officer.

J. P. Waldron, Cashier.

L. A. Townsend, Acting Paymaster, Ancon.

C. E. Gilmore, Paymaster, Cristobal.

Examination of Accounts.

Headquarters, Empire.

H. A. A. Smith, Examiner of Accounts.

T. L. Clear, Assistant Examiner of Accounts.

Purchasing Department.

Headquarters, Washington, D. C.

Maj. F. C. Boggs, U. S. A., General Purchasing Officer.

C. E. Dole, Chief Clerk.

Capt. Courtland Nixon, Purchasing Agent on the Isthmus.

Maj. Wendell L. Simpson, U. S. A., Assistant Purchasing Officer, 24 State Street, New York City.

Maj. F. H. Lawton, U. S. A., Assistant Purchasing Agent, 614 Whitney-Central Building, New Orleans, La.

Panama Railroad Company.

Headquarters, Colon.
(General offices, 24 State Street, New York.)

J. A. Smith, General Superintendent, Colon.

R. L. Mock, Chief Clerk.

Lieut. Frederick Mears, U. S. A., Chief Engineer.

A. K. Stone, Master of Transportation.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steamship Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line.

NEW YORK TO CRISTOBAL.

Panama	P. R. R.	Saturday	June	8
Allianca	P. R. R.	Friday	June	14
Colon	P. R. R.	Friday	June	21
Advance	P. R. R.	Thursday	June	27
Panama	P. R. R.	Wednesday	July	3
Allianca	P. R. R.	Tuesday	July	9
Colon	P. R. R.	Monday	July	15
Advance	P. R. R.	Monday	July	22
Panama	P. R. R.	Saturday	July	27
Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21
Allianca	P.R.R.	Tuesday	Aug.	27

CRISTOBAL TO NEW YORK.

Advance	P. R. R.	Saturday	June	15
Panama	P. R. R.	Friday	June	21
Allianca	P. R. R.	Thursday	June	27
Colon	P. R. R.	Wednesday	July	3
Advance	P. R. R.	Tuesday	July	9
Panama	P. R. R.	Monday	July	15
Allianca	P. R. R.	Sunday	July	21
Colon	P. R. R.	Sunday	July	28
Advance	P. R. R.	Saturday	Aug.	3
Panama	P. R. R.	Friday	Aug.	9
Allianca	P. R. R.	Thursday	Aug.	15
Colon	P. R. R.	Wednesday	Aug.	21
Advance	P.R.R.	Tuesday	Aug.	27

NEW YORK TO COLON.

Almirante	U. F. C.	Wednesday	June	5
Thames	R. M.	Saturday	June	8
Carrillo	U. F. C.	Saturday	June	8
Prinz Eitel Friedrich	H.-A.	Saturday	June	8
Prinz August Wilhelm	H.-A.	Saturday	June	15
Turrialba	U.F.C.	Saturday	June	15
Metapan	U. F. C.	Wednesday	June	19
Prinz Sigismund	H.-A.	Saturday	June	22
Trent	R. M.	Saturday	June	22
Tivives	U. F. C.	Saturday	June	22
Zacapa	U. F. C.	Wednesday	June	26
Prinz Joachim	H.-A.	Saturday	June	29
Sixaola	U. F. C.	Saturday	June	29
Prinz Eitel Friedrich	H.-A.	Saturday	July	6
Prinz August Wilhelm	H.-A.	Saturday	July	13
Prinz Sigismund	H.-A.	Saturday	July	20

COLON TO NEW YORK.

Zacapa	U. F. C.	Thursday	June	13
Sixaola	U. F. C.	Tuesday	June	18
Prinz Joachim	H.-A.	Tuesday	June	18
Almirante	U. F. C.	Thursday	June	20
Prinz Eitel Friedrich	H.-A.	Monday	June	24
Magdalena	R. M.	Tuesday	June	25
Carrillo	U. F. C.	Tuesday	June	25
Santa Marta	U. F. C.	Thursday	June	27
Prinz August Wilhelm	H.-A.	Tuesday	July	2
Turrialba	U. F. C.	Tuesday	July	2
Metapan	U. F. C.	Thursday	July	4
Prinz Sigismund	H.-A.	Monday	July	8
Tivives	U. F. C.	Tuesday	July	9
Zacapa	U. F. C.	Thursday	July	11
Prinz Eitel Friedrich	H.-A.	Monday	July	22

NEW ORLEANS TO COLON.

Parismina	U. F. C.	Saturday	June	8
Cartago	U. F. C.	Wednesday	June	12
Abangarez	U. F. C.	Saturday	June	15
Heredia	U. F. C.	Wednesday	June	19
Atenas	U. F. C.	Saturday	June	22
Orleanian	U. F. C.	Wednesday	June	26
Parismina	U. F. C.	Saturday	June	29

COLON TO NEW ORLEANS.

Atenas	U. F. C.	Thursday	June	13
Orleanian	U. F. C.	Thursday	June	13
Parismina	U. F. C.	Thursday	June	20
Cartago	U. F. C.	Thursday	June	20
Abangarez	U. F. C.	Thursday	June	27
Heredia	U. F. C.	Thurdsay	June	27

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JUNE 19, 1912. No. 43.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Acting Chairman's Monthly Report.

The report of the Acting Chairman of the Isthmian Canal Commission for the month of May is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Extension of Mole at Cristobal Terminals.

Under the plans authorized to date for the Cristobal terminals, the mole from which piers are to extend, has a length of 2,050 feet from the shore. It is thought that this may not be adequate to protect vessels, lying on the west side of Pier 17, in all weathers, and estimates are being prepared to cover an extension of the mole for a distance of about 1,200 feet beyond its present authorized length.

In preparation for such extension, the spoil, consisting mostly of coral, being excavated by the dipper dredge *Mindi* in the slip between Wharf 16 and Pier 17, is dumped at the outer end of the present mole. It is being deposited over a distance of 500 feet in extension of the axis of the mole; and further excavation at Cristobal, supplemented if necessary by spoil from the Atlantic entrance, will furnish material for dumping over the remainder of the proposed extension.

Sluice Gates in Gatun Spillway Opened.

Two of the sluice gates in the ogee of the Spillway dam at Gatun were opened on June 5, since which the surface of Gatun Lake has risen only three-fifths of a foot. The surface of the lake had reached an elevation of 26.5 feet above sealevel when the gates were opened to prevent a rise which might submerge, at elevation 28 feet, the sills for the floating caisson dams in the upper approach to Gatun Locks. The upstream angle of each of the concrete sills, with which the caisson will be in contact when in use, is being sheathed with steel plates, and it was to obviate interference with this work that the Spillway gates were opened. The sheathing will probably be completed before the end of this week, and the gates will be closed as soon as possible. The opening of the gates has caused the appearance at the lower end of the lake of a number of floating islands. These are masses of decayed vegetation and fallen trees, held together by the roots of a dense overgrowth of swamp plants. They appear to have formed in the Black swamp and to have been been loosened by the 10-foot rise of the lake since April 30. The opening of the sluice gates made currents which have brought them toward the Dam. So far about twenty have floated down. They vary in size; some being 300 feet long and 200 feet wide, and, in general, are of sufficient solidity to support a man in walking over them.

Excavation for Balboa Terminal Docks Begun.

Excavation on the north side of Sosa Hill for the permanent Balboa roadway, the Panama railroad connections to present docks, and a part of the site for the proposed new terminal docks, was begun on Thursday, June 13, by steamshovel No. 126, which was recently transferred from the Central Division to the Pacific Division, and has just been overhauled in the shops. The excavation work was started at a point opposite a collection of native houses, known as Little Panama. The material is being used to make a fill in the swamp between Diablo and Sosa hills, where the permanent track layout in connection with the docks is planned. The excavation will be extended around the hill, and the deepest cut into it, approximately 100 feet, to accommodate one end of the dry dock, will be about where the Balboa police station formerly stood.

Removing Quarters at Balboa.

The removal of the quarters in the American section of the town of Balboa, preliminary to excavating for the permanent terminal, necessitates providing other quarters for approximately 50 families, 97 bachelors, and 213 West Indian laborers. This will be accomplished by moving buildings to East Balboa and camps adjacent to Ancon and by converting to different uses some buildings already at those places.

The police station at Balboa is to be moved to East Balboa and made over into bachelor quarters. Police supervision of East Balboa and the Balboa area is to be conducted by the Ancon station. The second story of the East Balboa hotel will be converted into bachelor quarters, and a type-18 house in the village, which has been used for nonhousekeeping quarters, will be returned to the service for which it was designed. These arrangements provide accommodations for a maximum of 114 bachelors.

Family quarters will be provided by moving four buildings from Balboa to Ancon, four buildings from Spillway, Gatun, to Ancon, three buildings from Gorgona to Ancon, and converting four buildings now at Ancon. Each of the 15 buildings will be converted into two-family houses, and, in the Spanish camp, No. 2, Ancon, similarly altering three buildings and changing seven "silver" married quarters into one-family "gold" quarters. This provides for 43 families. Others will be accommodated at Corozal and Pedro Miguel.

Provision for the West Indian laborers will be made by converting married "silver" quarters at East Balboa into camps.

Arrival of "Reliance" at Balboa.

The tug *Reliance*, with three barges in tow, arrived in Panama Bay during the afternoon of June 17, from Colon, via the Strait of Magellan. The craft left Cristobal in the morning of February 11, and 126 days were occupied by the voyage of 10,500 miles. The number of steaming days was 86. From Para to Pernambuco, 1,100 miles, the time was nine days and five hours. The severest weather was encountered during the first three days out, and it was necessary to anchor in Savanilla Bay for repairs. The heavy seas had kept the decks awash, the towing machine at the stern of the tug was often submerged, while the prow of the vessel was in the air. After rounding the shoulder of South America, the tug met with generally moderate seas, and the principal difficulties were with the supplies of coal and water.

The crew of 34 men, under command of R. C. Thompson, master of the *Reliance*, manning the tug and tow, remained in good health throughout the voyage, with slight exceptions. The craft arrived at the end of the voyage in good condition.

Following is a list of ports of call made by the *Reliance*: Willemstad, February 19; Port of Spain, February 26; Para, March 15; Pernambuco, March 24; Rio de Janeiro, April 4; Montevideo, April 18; Punta Arenas, May 9; La Concepcion, May 26; Taltal, June 2; Balboa, June 17.

It is thought that this is the first time a tow of this character has ever taken a trip of such a length and through such seas.

Accident to the "Corozal."

The main driving wheel gear on the port side of the new ladder dredge *Corozal* broke on the afternoon of Tuesday, June 4, placing the remainder of the machinery out of commission. The accident occurred while the dredge was excavating in a 25-foot bank, the upper part of which consisted of stratified clay, and the lower part of argillaceous sandstone. The wheel gear is a ponderous affair, made up of an outer wheel, or cog rim, and an inner wheel, consisting of rim, spokes, and hub, which works by means of a friction brake. The entire wheel gear is 14½ feet in diameter, two feet thick, and each section weighs close to 10 tons, making the combined weight about 20 tons. So heavy was it that the dredge had to be taken to the Panama railroad wharf, and the wheel removed in

NOTES OF PROGRESS.

(*Continued.*)

sections by crane. The accident was a peculiar one, and the first of the kind on an Isthmian Canal Commission dredge, although it is recorded that a similar accident occurred on a Suez Canal dredge. Every one of the six huge iron spokes was broken short off, leaving the hub entirely free from the remainder of the gear. A new casting has been made at Gorgona shops, and machined at Empire, which was ready for shipment on the 17th instant. Another casting has been ordered by cable from the builders of the dredge in Scotland, and, it is expected, will be shipped about the end of June.

United Spanish War Veterans.

The next regular meeting of Chagres Camp, No. 2, U. S. W. V., will be held at Empire lodge hall on Sunday, June 23, at 3 p. m. A large attendance is desired as there is special business to be transacted in connection with the semiannual inspection to be held on June 29.

CONCRETE WORK IN THE LOCKS

Over 87 per cent of the concrete for the locks is in place. the amount at the close of work on June 15 being 3,749,482½ cubic yards, out of a total of approximately 4,302,563. A total of 18,818 cubic yards of concrete was laid in the locks during the week ending June 15.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on June 15 being 1,877,579½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending June 15, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	
June 10	328	6.02	2					328
June 11	168	4.06	2					169½
June 12	256	4.18	2					256
June 13	260	4.26	2					260
June 14	302	5.22	2					307½
June 15	236	4.10	2					246
*Portable mixer				17				
Total	1,550	28.24	2	17				1,567
Previously reported								1,876,012½
Grand total								1,877,579½

The 17 yards shown for the portable mixer are reinforced concrete, and were placed on the following days: June 11th, 1½; June 14th, 5½; June 15th, 10.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is about 96 per cent completed. 853,014 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on June 15. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	
June 10	114	3.00	1	324	25.50	6		438
June 11	120	3.00	1	223	29.00	5		343
June 12	80	2.00	1	232	28.00	4		312
June 13	100	2.50	1	315	31.00	6		415
June 14	64	2.00	1	300	31.00	6	30	394
June 15	60	1.75	1	267	26.50	5		327
Total	538	14.25	1	1,661	171.00	5.33	30	2,229
Previously reported							4,438	850,785
Grand total							4,468	853,014

MIRAFLORES LOCKS.

Over 72 per cent of the concrete for the system of two twin locks at Miraflores was in place on June 15, the total amount on that date being 1,018,889 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
June 10	894	24.17	7	1,180	19.25	3	451	32.00	6		2,525
June 11	1,102	27.83	7	994	15.00	3	346	34.50	7		2,442
June 12	940	28.92	5	1,602	24.33	3	267	27.00	5		2,809
June 13	724	27.42	7	1,674	25.08	3	332	35.50	5		2,730
June 14	718	17.67	7	1,498	22.50	3	346	33.50	5		2,562
June 15	568	13.56	7	1,092	16.25	3	294	35.50	6		1,954
Total	4,946	139.57	6.67	8,040	122.41	3	2,036	198.00	5.67		15,022
Previously reported										3,693	1,003,867
Grand total										3,693	1,018,889

EXECUTIVE ORDER.

Special Orders No. 129.

WAR DEPARTMENT,
WASHINGTON, June 1, 1912.

Extract—1. The following Executive Order is published for the information and guidance of all concerned:

EXECUTIVE ORDER.

It is hereby ordered that all Portland cement that may hereafter be purchased by any department, bureau, office, or independent establishment of the Government, or that may be used in construction work connected with any of the aforesaid branches of the Government service, shall conform in every respect to the specification for Portland cement adopted by the departmental conference at the meeting held at the Bureau of Standards on February 13, 1912, and approved by the heads of the several departments (to be known as the United States Government specification for Portland cement): *Provided, however,* That such specification may be modified from time to time by any similar departmental conference, with the approval of the heads of the several departments.

WM. H. TAFT.

THE WHITE HOUSE,
April 30, 1912

The United States Government specification for Portland cement, referred to in the foregoing Order, has been published by the Department of Commerce and Labor as Circular of the Bureau of Standards, No. 33.

[1914631], A. G. O.

* * * * *

By order of the Secretary of War:

LEONARD WOOD,
Major General, Chief of Staff.

OFFICIAL:
W. P. HALL,
The Adjutant General.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 89 per cent completed, 201,152 cubic yards, out of a total of 225,000, having been placed at the close of work on June 15. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
June 10	112	6.15	1
June 11	84	5.00	1
June 12	128	6.00	1
June 13	118	7.00	2
June 14	120	4.30	1
June 15	72	2.30	1
Total	634	31.15	1.17
Previously reported	*200,518		
Grand total	201,152		

*Revised to June 8.

Pythian Memorial Service.

The Canal Zone lodges of the order of the Knights of Pythias held their first annual memorial service in the National Theatre, Panama, on Sunday, June 16. A special train brought the members and their friends from Colon, arriving at Panama at 2.30. At the station a line of march was formed, which included 400 members of the order, with 75 members of the Uniform Rank. The procession was headed by the band of the Tenth Infantry. The program consisted of the memorial ritual of the order, an address by the Rev. William H. Decker, and selections by the band. The roll call included the names of members who have died since 1907, the year of the institution of the order in the Canal Zone. There are eight lodges in the

Zone, as follows: Panama No. 1, (Cristobal); Empire, No. 2; Culebra, No. 3; Balboa, No. 4; Lock City, No. 5, (Gatun); Paradise, No. 6, (Paraiso); Ancon, No. 7; Cruces, No. 8, (Gorgona.) There are four companies of the Uniform Rank. The total membership is about 1,000.

High School Commencement.

The date for the service in connection with the commencement of the Canal Zone high school has been fixed for June 23, instead of June 30, as previously announced. This service will be held in the Gatun clubhouse at 9.30 a. m., and the Rev. Henry A. Brown, chaplain, Engineer Corps, U. S. A. will preach. The high school will give its annual entertainment at the various clubhouses after the close of the school. The dates of these entertainments will be announced later.

Lawn Tennis Tournament.

The Fourth of July celebration committee will hold the usual open tennis tournament in singles and doubles at Ancon.

Singles—The preliminaries, including the semifinals, will be played on June 23. Matches, best two out of three sets. Entries close June 19 at 12 noon. The finals will be played at 10 a. m., July 4, best three out of five sets.

Doubles—The preliminaries, including the semifinals, will be played on June 30. Matches, best two out of three sets. Entries close June 26 at 12 noon. The finals will be played at 3 p. m., July 4, best three out of five sets.

Consolation—In singles and doubles on July 4; only those defeated by the winners of the semifinals are eligible.

Prizes will consist of gold, silver, and bronze medals. Entries may be made by letter, or by telephone, to Chase Pulsifer, Empire, C. Z., care of office of Examiner of Accounts, telephone, 189. There is no entry fee.

Services at St. Luke's, Ancon.

Major Henry A. Brown, chaplain of Ancon Hospital, returned from his leave of absence on the *Parismina*, on Thursday, June 13. The services at St. Luke's Hospital Chapel will be maintained as usual, Holy communion at 7 a. m., and divine service at 10 a. m. Owing to the absence of the chaplain from Ancon on Sunday, June 23, there will be no services at St. Luke's Chapel.

Obituary.

Thomas Coarts Reynolds, the one-year old son of Mr. and Mrs. Thomas M. Reynolds of Cristobal, died in Colon Hospital on June 13.

Isaac Powers, an employe of the Pacific Division at Miraflores, died at Ancon Hospital on June 14. He was 56 years of age, a widower, and had been on the Isthmus six years.

The body of Joseph Brenner, who was missing when the launch *Cathandre* was destroyed by fire on Sunday, June 9, has been recovered and will be buried at Ancon. Mr. Brenner was employed in the cold storage department of the Panama railroad commissary at Cristobal; was 38 years of age, and had been on the Isthmus four years, coming here from New Orleans, where he formerly resided. He is survived by his wife and infant daughter, living at Cristobal.

Band Concert.

A concert will be given by the Isthmian Canal Commission Band at Corozal, C. Z., Sunday, June 23, 1912, at 5 p. m.

CANAL WORK IN MAY.

Monthly Report of the Acting Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., June 15, 1912.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of May, 1912:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	27,134	1,418,284	179,277	1,624,695
Work excavation, wet	Cubic yards	430,156	....	388,310	818,466
Total work excavation	Cubic yards	457,290	1,418,284	567,587	2,443,161
Plant excavation, dry	Cubic yards	....	....	....	......
Plant excavation, wet	Cubic yards	2,847	....	60,908	63,755
Total plant excavation	Cubic yards	2,847	....	60,908	63,755
Total Canal excavation	Cubic yards	460,137	1,418,284	628,495	2,506,916
Material placed in dams	Cubic yards	421,750	....	53,002	474,752
Concrete placed in locks and dams	Cubic yards	9,666	....	102,831	112,497
Explosives used	Tons (Gross)	58.21	189.42	36.18	283.81
Rock drilled	Feet	38,583	401,095	74,698	514,376
Tracks removed	Miles	....	13.95	....	13.95
New tracks laid	Miles	2.28	16.62	2.90	21.80
Rock crushed	Cubic yards	....	....	102,302	102,302
Cement used	Barrels	13,868	138	104,888	118,894
New roads built	Miles	0.17.	....	....	0.17
Water mains laid	Feet	5,351	1,992	794	8,137
Sewers laid	Feet	1,672	80	304	2,056
Open drains and ditches dug	Feet	53,514	36,335	4,787	94,636
Average daily force	....	5,499	7,405	6,257	19,161
Average rainfall	Inches	12.93	7.96	8.24	9.01

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the division engineers and the erection subdivision of this office, the inspection of this work being cared for by the masonry and lock structures subdivision. Work was continued on the grinding of fixed irons and preparing valve chambers for the installation of the valves and bulkheads, which work is being done under supervision of this office. This subdivision is also charged with general inspection of masonry work of all the locks.

LOCK GATES AND PROTECTIVE DEVICES.

Up to May 20, a total of 50,813 tons of structural material was accepted at the rolling mills, in addition to replace orders, of which 1,952 were accepted between April 20 and May 20. This nearly completes the material required, excepting for the spare parts. A total of 36,046 tons of structural riveted steel had been shipped from the Rankin shops, or about 70 per cent of the total contract weight of this class. Of this last item, 4,270 tons were shipped between April 20 and May 20.

LOCK GATE ERECTION.

Gatun—Upper guard gates, 54 feet 8 inches high, leaves Nos. 37 to 40, inclusive—The work on these leaves during May consisted mainly in fitting end reaction castings and wedge fillers, driving rivets in the sheathing which could not be driven previously, attaching manhole covers and bottom fender angles, and also the angles for the water seal. Leaves Nos. 37, 39 and 40 were placed on their pintles and attached to the anchorages on May 7, 16, and 20, respectively. The principal work necessary for the completion of these gates is the aligning and babbitting of the bearing plates along the quoin and miter posts of all four leaves; also, the attachment of the water seals, and the water testing. Besides this, a small amount of fitting, riveting and miscellaneous work, mainly on leaves Nos. 39 and 40, remains to be done. The footwalks and handrailing are not in place on any of the leaves, nor has any field painting been done. It is expected to begin the water testing in a day or two. Practically all material is in place. The erection of these four leaves began May 27, 1911.

Upper gates, upper lock, 77 feet high, leaves Nos. 33 to 36, inclusive—A small amount of riveting was done during the month, so that about half the rivets through the sheathing have now been driven, compared with about one-third at the beginning of the month. All rivet holes in the sheathing were reamed and all the rivets in the skeletons driven prior to May 1. Practically all material, except castings, is in place. The erection of these four leaves began October 9, 1911.

Middle gates, upper lock, 77 feet high, leaves Nos. 29 to 32, inclusive—The work during the month consisted in reaming rivet holes through the sheathing. Sixty-five per cent of the total number in the four leaves have been reamed, of which 45 per cent were reamed before May 1. Practically all the structural steel is in place, but no sheathing rivets have been driven. The erection of these four leaves began January 27, 1912.

Safety gates, upper lock, 77 feet high, leaves Nos. 25 to 28, inclusive—The skeletons of all four leaves have been erected, excepting the top girders, and about three-fourths of the interior rivets driven. About half the sheathing plates have been attached to the frame, but only a small part of same has been bolted up. The work in May consisted of the attachment of about 42 per cent of the total sheathing plates, and the driving of 47 per cent of the interior rivets in the four leaves. No reaming has been done, and no rivets driven through the sheathing. The first set of erection bridges is engaged on these leaves. The erection of these four leaves began April 1, 1912.

Middle gates, lower lock, 77 feet high, leaves Nos. 9 to 12, inclusive—About 25 per cent of the skeletons of the four leaves have been erected and one panel in each leaf riveted. About 20 per cent of this material was erected during May. The second set of erection bridges is engaged on these leaves. The erection of these leaves began April 12, 1912.

Pedro Miguel—Upper guard gates, 54 feet

8 inches high, four leaves, Nos. 50 to 53, inclusive—The work during the month consisted in grinding a small amount of the end plates on the quoin and miter posts for the reception of the reaction castings. This work has not yet been completed on any of the leaves. Practically all the structural material is in place. The erection of these leaves began August 7, 1911.

Upper gates, 79 feet high, leaves Nos. 54 to 57, inclusive—Practically all structural steel is now in place and the interior riveting is nearly complete. No reaming has been done nor any rivets driven through the sheathing. The work during May consisted in attaching about three-eighths of the total number of sheathing plates in the leaves and in erecting the top girders. The erection of these leaves began January 29, 1912. The first erecting bridge is still engaged on these leaves.

Safety gates, 79 feet high, leaves Nos. 62 to 65, inclusive—Practically all structural steel had been erected prior to May 1, and nearly all interior riveting completed, but hardly any reaming done. During May, about 60 per cent of the rivet holes in the sheathing were reamed and about two per cent riveted. The erection of these leaves began December 15, 1911.

Lower guard gates, 47 feet 4 inches high, leaves Nos. 70 to 73, inclusive—The erection of these leaves was started with a locomotive crane, April 9, 1912, when two bottom girders were placed in the chamber. Work has been held up since then on account of lack of material.

Lower gates, 79 feet high, leaves Nos. 66 to 69, inclusive—The erection of these leaves was started May 1, and about one-third of the skeleton was put in place and the interior riveting begun.

Miraflores—No material has been erected in these locks.

The total tonnage of lock gates erected on the Canal to June 1, was, without regard to its being fully reamed or riveted, about 15,872 tons, out of a total of about 58,000 tons, or about 28 per cent. Of this, 2,010 tons, or about four per cent were erected during May. The total of field rivets driven was 780,000, or about 14 per cent, of which 129,500, or about two and one-fourth per cent were driven in May.

The total amount of work done during the month fell decidedly below the amount laid down in the program, both as to erecting, reaming and riveting. Of the 2,100 tons "erected," nearly one-half was raised by the lower bridges at Pedro Miguel. The lower bridges at Gatun raised 300 tons of girders for the middle gates of the lower lock. This bridge was idle most of the month. The other two bridges raised 400 and 350 tons, respectively, of sheathing plates. The three last sets of bridges fell below the standard of 750 to 900 tons set in the program, mainly from lack of material. The reaming and riveting was also far below the required average. This was due in part to lack of "erected" material, and in part, to shortage in tools, bolts and erecting force.

The machine work, etc., on the upper guard gates at Gatun has progressed satisfactorily. This is necessarily slow work and a more intelligent arrangement of this part of the work, by which the castings could be attached, fitted, bolted and riveted at the same time as the riveting through the sheathing proceeds is imperative for rapid progress. Frequent shortages in grinding wheels, etc., have also delayed this work.

LOCK GATE RECESS COVERS.

All material, excepting a small part of the castings, has been received. Thirty-three covers out of 36 have been erected at Gatun, 31 riveted and 20 aligned and grouted. At Pedro Miguel, all the 20 covers have been erected and riveted, and four of same have been aligned and grouted. No covers have been erected at Miraflores.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection, as follows:

(*1*) *For the rising stem and cylindrical valve machines purchased under Circular 614*—The two trial rising stem gate valve machines, Nos. 260 and 261, are now on the Isthmus and the installation is practically completed. The required parts to make connection of valve stems to crossheads were received during the month and installation continued. Eleven rising stem gate valve machines were shipped from the works of the contractor during the month, but on account of stevedore strike on the docks at Baltimore, the shipping point, the machines have been held up.

Satisfactory progress is being made in the delivery of the various groups named in the contracts as parts not required to be tested.

Ten of the 118 cylindrical valve machines have been received. Fifteen more cylindrical valve machines, one 36-inch and one 60-inch auxiliary culvert valve machines, were also shipped from the works of the contractor during the month, but were held up on account of the strike at Baltimore.

Hydraulic tests on the first of the two cylindrical valve machines received on the Isthmus were continued during the month. Continued tests of the valve demonstrated excessive leakage at the seat. Certain modifications were made in segmental plates holding the seals, and the concluding tests showed a decided improvement in the leakage.

Satisfactory progress was made at the works of the contractors on the drawings for the motors for the rising stem and cylindrical valve machines.

Work is progressing satisfactorily on the manufacture of the 232 limit switches. The contractors have fifteen limit switches completed and on the test floor, and it is expected that 25 more will be placed on the test floor during the forepart of the coming month.

(*2*) *For the gate and girder hoisting machinery for the emergency dams, purchased under Circular 616*—Satisfactory progress was made on this machinery during the month.

(*3*) *For the rack railway and other material purchased under circulars Nos. 619, 635, 636, 636-D, 647, 666, and 688*—Curved racks for inclines were received during the month. Out of the 57 items contained in the above circular, 27 items are 100 per cent completed.

(*4*) *For the gate operating machines, Class 1, and miter forcing machines, Class 2, and motors for same, Classes 3 and 4, purchased under Circular 627*—At 9.30 a. m., on May 13, miter gate No. 38, to which strut and operating machine had been connected during the month, was swung in the air. Both the machine and the gate functioned satisfactorily. At the end of the month, the second miter gate moving machine, received during April, was about 90 per cent completed.

On May 9, the General Purchasing Officer was authorized to make award to the General Electric Company for Item 1, two motors, and Item 2, ninety motors for miter gate moving machines.

Award was also made to the General Electric Company for Item 2, Class 4, forty-five motors, conditionally, until final determination is made for the adoption of a miter forcing machine, which cannot be decided upon until the trial machine now on the Isthmus is tested. Test will not be possible until the gate contractor has completed one pair of leaves.

(*5*) *For the hydroelectric station equipment, purchased under Circular 648*—Parts of three penstocks were received during the month. Work progressed satisfactorily.

(*6*) *For the electric towing locomotives, purchased under Circular 650*—Practically all of the working drawings have been prepared for Class 1, Item 1, one trial locomotive. Award has not yet been made for the remaining 39 locomotives.

(*7*) *For the Spillway gate machines and pumps purchased under Circular 661*—Work is progressing satisfactorily on test rig, plans, etc.

(*8*) *For locomotive cranes for erection plant of machinery and electrical equipment, purchased under Circular 662*—Two additional locomotive cranes were received during the month, which completes the order for eight locomotive cranes. The last two cranes are now being erected at Gorgona shops.

(*9*) *For control apparatus for all locks, purchased under Circular 679*—The General Purchasing Officer was authorized on April 15, to award all items of Class 1, 506 starting panels; Class 2, 270 limit switches, 92 commutating switches, 92 auxiliary cut-out switches, 200 indicator switches, and 80 handrail controllers; Class 3, 472 indicators; Class 4, five switchboards; Class 5, excepting item 27, fender chain control apparatus, to the General Electric Company. Item 27 of Class 5, covering two indicating devices, was awarded to the Union Switch and Signal Company.

(*10*) *For motors, pumps, float switches and starters purchased under Circular 681*—The General Purchasing Officer was authorized on April 29 to award all motors, float switches, and starters to the General Electric Company: 80 handrail gearings to the Earle Gear and Machine Company; pumps for chain fender machines, drainage sumps and main culverts, to the Cameron Pump Company; pumps for chain fender sumps, miter gates, and for machinery and cable pits, to Alberger Pump Company.

(*11*) *For crossovers advertised under Circular 688*—The General Purchasing Officer was authorized on April 26 to award contract to the United States Steel Products Company for Items 1 to 4 of Class 1, eighteen crossovers. Work on these crossovers progressed satisfactorily during the month.

The following is a summary of the work accomplished in the field by the erecting forces:

Atlantic Division Locks—The force engaged in installing machinery and electrical equipment on the Isthmus assembled 414 feet of towing track, including the assembling of rack sections, channels, anchor bolts, and "T" rails, and bonding of the same. (This does not include the installation of conductor rails, conductor slot covers, and brackets.) A total of 4,614 feet of towing track has been placed and finished to date.

Miter gate moving machine No. 38 was

completed. Miter gate moving machine No. 37 is about 90 per cent complete. Cylindrical valve operating machines for valves 540, 541, 542, 543, 544, 546, 547, 548, and 549 have been put in place. The stem connections have not been completed for all of the above valves. Stem connections for rising stem valve machines Nos. 260 and 261 have been received, and are in place. The lining up and chipping of fixed irons was continued throughout the month on valves 256-257 and 262-263. Intake valves 264, 265, and 266 have been completed; and 267, 268, and 269 are about 80 per cent completed.

Pacific Division Locks—Most of the work in the Pacific Division locks has been of a preparatory nature, and at Pedro Miguel only. Bulkhead frames were placed and lined in valves Nos. 328 and 329. All pipe work was finished in all cylindrical valves below masonry. One thousand eight hundred and twelve feet of towing track were laid. During the month, 220 cubic yards of concrete were placed for the towing track. One recess cover form was 85 per cent completed.

EMERGENCY DAMS.

The inspection work in the United States progressed satisfactorily during the month. A revised list of drawings showed that up to May 20th, 908 drawings for the Gatun and Pedro Miguel emergency dams had been completed, out of a total number of 918 drawings required. For Miraflores emergency dams, 100 drawings have been completed, out of a total number of 550 required.

At the rolling mills and foundries, 81 tons of riveted nickel steel, 145 tons of riveted structural steel, 195 tons of turning and wedging machinery, including miscellaneous material, were fabricated during the month. At the shops, 585 tons of riveted nickel steel, 283 tons of riveted structural steel, 44 tons of turning and wedging machinery, including miscellaneous material, were fabricated during the month.

Satisfactory progress has been made on the roller bearings, all the bearings for all six dams having been manufactured and accepted.

To summarize, practically all the material for the first four dams and 10 per cent for the last two dams has been manufactured and accepted at the rolling mills and foundries; and 33 per cent of the total material required for all six dams has been manufactured in the shops.

INSPECTION ON ISTHMUS.

The contractors had arranged to start the erection on the Isthmus on May 15, but due to the strike of the stevedores at Baltimore, the shipment of material has been delayed, and, thereby also, the erection. By the middle of the present month it is expected to receive on the Isthmus, 1,100 tons of material, and the contractor has completed practically all the necessary preparations for the erection immediately upon the receipt of this material. Up to date only 75 tons of castings have been received at the sites of the emergency dams.

AIDS TO NAVIGATION.

Surveys—Practically all of the surveys required in connection with the work of this subdivision are completed. The force on this work were engaged during the month in plotting up field notes, and detailing drawings for the west breakwater light in Colon Harbor.

Construction—Range 9-11, Pacific Division—The ball ventilators for both towers were set in place; otherwise, the status of the towers is the same as when last reported.

Range No. 1-2—Pacific Division—Same status as when last reported.

Range No. 13-14—Pacific Division—Same status as when last reported.

Range No. 5-6—Pacific Divsion—Same status as when last reported.

Range No. 21-22—Gatun Lake Section—Same status as when last reported.

Range No. 24-25—Gatun Lake Section, front tower—The reinforced concrete stairway was completed and the door and windows were hung. *Rear Tower*—The concrete newel post and stairway were completed, and the door and windows were hung.

Range No. 1-2—Gatun Lake Section—Front tower—The reinforced concrete platform upon which the tower is superimposed was completed, except the railing. The walls of the tower were carried up to their final height; the vestibule and windows were completed; and the concrete stairway was about 90 per cent completed.

Range No. 5-6—Gatun Lake Section—Front tower—The site for the front tower was selected and preparations are under way for the construction of this tower.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month, two shovels were engaged in borrow pit excavation for the locks backfill and construction tracks, 74,654 cubic yards of material being removed.

Backfill—Backfilling behind the side and center walls of the middle and center locks was continued. The quantity placed during the month aggregated 73,053 cubic yards, distributed, as follows: East wall, 18,878 cubic yards; west wall, 47,701 cubic yards; center wall, 6,474 cubic yards. The total placed to June 1 amounted to 1,467,759 cubic yards, which was 80.42 per cent of the entire backfill.

Receiving and Issuing Material—The receipts of sand and cement exceeded the consumption by 2,999 cubic yards, and 7,674 barrels, respectively, and the consumption of rock exceeded the receipts by 4,264 cubic yards.

Mixing and Placing Plants—Plant No. 1 and all portable mixers were kept in satisfactory operation during the month.

Iron and Steel Work—During the month, 303.4 tons of fixed steel, and 58,900 feet of reinforcing rods were placed, and 46.6 tons of electric return track were laid.

Concrete Work—There was a decrease of 3,914½ cubic yards in the amount of concrete laid, as compared with the figures for the preceding month. The daily average for the 27 working days was 287 cubic yards, as compared with a daily average during April of 464 cubic yards. The total amount of concrete placed during the month was 7,745½ cubic yards. The place measurement exceeded the bucket measurement by 86½ yards. Of the total, 1,915 cubic yards were placed in the upper lock, 2,488 cubic yards in the middle lock, and 3,342½ cubic yards in the lower lock. The concrete work for the entire lock system was 93.48 per cent complete at the end of May.

OPERATION OF THE PERMANENT CONCRETE CONSTRUCTION PLANTS.

Length of working day (hours)	9.00
Average number of hours per day worked, per strand of cableway laying concrete (actual working time)	1.05
Average number of mixers per day	2.04
Average hourly output per mixer (actual working time) cu. yds	59.95
Average amount of concrete laid per hour per strand of cableway (actual working time) cu. yds	26.13
Concrete laid (cubic yards) cableways	5,711.00
Concrete laid (cubic yards(derricks	1,205.00
Concrete laid (cubic yards) portable mixers	743.00
Total	7,659.00

GATUN DAM.

Construction during the month increased the total fill, as determined by cross sections of the material in place, by 421,750 cubic yards, making the total amount in place 19,465,181 cubic yards. On June 1, the Dam was 90.53 per cent completed.

Hydraulic Fill—The dredges increased the hydraulic fill by 194,733 cubic yards, making the total hydraulic fill in place May 31st, 9,794,390 cubic yards.

Dry Fill—The material received from the steamshovels, amounting to 227,017 cubic yards, was placed on the north and south toes of the Dam, east and west of the Spillway, making the total dry fill in place 9,670,791 cubic yards.

GATUN SPILLWAY.

Backfill—Backfilling was not extended during the month, the total remaining at 16,236 cubic yards.

Concrete—The work of placing concrete was continued. The amount placed during the month aggregated 1,920 cubic yards, which increased the total to 199,790 cubic yards. The concrete work for the Spillway was 88.8 per cent completed.

HARBOR AND CHANNEL SECTION.

Dredging from the Ocean to Mindi—Four dredges removed 283,558 cubic yards of earth, and 46,068 cubic yards of rock from the Canal prism. In addition, the dredge *Mindi* removed 35,328 cubic yards of rock from the Panama railroad Cristobal terminal docks, and the dredge *Chagres* removed 2,847 cubic years of earth at the dynamite dock at Mindi, and 2,450 cubic yards from the slip at Gatun cement docks. On May 31st, 40 feet of water could be carried from zero to zero plus 1,850 feet; 35 feet to mile post 4 plus 1,400 feet; 30 feet to mile post 4 plus 3,200 feet, and 20 feet to mile post 6 plus 0 feet.

Approach to Gatun Locks—Two dredges removed 73,508 cubic yards of earth, and 27,022 cubic yards of rock from the Canal prism.

PORTO BELLO.

During the month, 7,559 cubic yards of rock were shipped to Toro Point for use in the construction of the breakwater.

No further crushing of rock will be performed at Porto Bello, there being a sufficient amount of crushed rock in storage at Gatun to complete the masonry for the Locks and the Spillway.

ROCK AND WATER SERVICE.

In connection with this service, plant steamed 3,290 miles, handled 366 barges, and carried 2,254 passengers.

WEST BREAKWATER, COLON.

During the month, 44,639 cubic yards of material were excavated, of which 44,009 cubic yards were dumped from the trestle, and 630 cubic yards furnished to fortification work. The double track trestle was extended 381 linear feet, and 16 feet of single track were built. On June 1, the trestle extended 10,895 linear feet from shore. Seven thousand five hundred and thirty-two cubic yards of Porto Bello rock were unloaded, making the total to June 1st, 57,768 cubic yards.

MUNICIPAL ENGINEERING

The reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended as required to facilitate construction work.

Work was continued on the Colon street improvements.

Central Division

During the month of May, the total amount of material excavated in the Central Division was 1,418,284 cubic yards, of which 230,412 cubic yards were classified as earth, and 1,187,872 cubic yards as rock. Of this quantity, 1,412,380 cubic yards were removed by steamshovels, and contractors removed 5,904 cubic yards by the same method. The total—1,418,284 cubic yards—was primary excavation for the Canal prism.

The daily average number of steamshovels at work during the month was 40.54, and the total number of shovel days was 1,054, as compared with 45.78 at work during the month of April, with 1,144½ shovel days.

For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work	W'kg days.	Av. yards per shovel day
		Rock.	Earth.			
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
1911: May....	1,298,240	1,149,886	148,354	38 62	26	1,293.08
1912: May....	1,412,380	1,187,872	224,508	40.54	26	1,340.01

Rainfall at Empire: 1911, 13.74 ins.; 1912, 6.21 ins.

The above table shows the average output per shovel to be 3.63 per cent greater in May, 1912, than in the corresponding month of 1911.

The total amount of material excavated from the prism in the Culebra section of the Central Division in May, 1912—1,405,760 cubic yards—was the highest record in that section for the month of May.

The total estimated amount of material to be removed in the Central Division, according to the revised estimate of July 1, 1911, was 101,801,296 cubic yards, and up to June 1, 1912, 93,044,477 cubic yards had been removed, leaving 8,756,819 cubic yards to be removed, in order to complete all excavation in the Central Division. From these figures it will be seen that 91.40 per cent of all excavation in the Central Division had been accomplished up to the close of the month of May, and 8.60 per cent remained uncompleted.

Considering the two sections which compose the Central Division, the excavation completed, and that to be completed, at the close of May operations was, as follows:

CULEBRA SECTION.	*Cu. Yds.*
Completed	80,669,022
To be completed	8,774,983
CHAGRES SECTION.	*Cu. Yds.*
Completed	12,375,455

From the above figures it will be seen that the Culebra section, locally known as the "Culebra Cut," was 90.19 per cent completed, with 9.81 per cent to be completed. The Chagres section was completed so far as dry excavation is concerned, but it is estimated that it will be necessary to remove about 300,000 cubic yards of wet excavation in this section.

During the month, 25,106 cubic yards of material were dumped in the embankment for the new roadbed for the relocation of the Panama railroad, increasing the total amount used for this purpose to 4,196,534 cubic yards.

During the month, no material was furnished this division for use in the construction of the Gatun Dam, the total amount remaining at 5,374,310 cubic yards.

There was also furnished to the Panama railroad 6,426 cubic yards of material for the terminals in Colon.

The daily average number of laborers at work on the whole division during the month was 6,755, while the daily average number of gold employes was 650.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

Excavation—The total excavation during the month amounted to 179,277 cubic yards, of which 76,649 cubic yards were classified as rock and 102,628 cubic yards as earth.

Filling and Embankment—During May, 21,782 cubic yards of dry filling were added to the prism of the west dam at Pedro Miguel, increasing the total amount of material in place at the close of the month to 567,537 cubic yards. The backfill at Pedro Miguel was increased by 43,440 cubic yards, the total amount in place at the end of the month aggregating 628,700 cubic yards.

At Miraflores, 31,220 cubic yards were added to the dry fill in the toes of the west dam. The total quantities of dry and hydraulic filling in place at the end of the month were 1,203,854 cubic yards, and 661,048 cubic yards, respectively. The backfill was increased by 38,541 cubic yards, the total aggregating 556,265 cubic yards at the end of the month.

Pedro Miguel Lock—Excavation in the Canal prism between the Pedro Miguel and Miraflores locks was continued, two steamshovels being employed. One steamshovel was engaged during the month in excavating the high ground along the east side of the lock, and one shovel was used to excavate the foundation for the northwest wing wall. The spoil from these four shovels was utilized for backfilling behind the lock walls and for topping the west dam. The wooden trestle across the south end of the west lock chamber was completed. During the month, 8,109 linear feet of vitrified ducts were laid in the operating tunnels. The amount of iron placed in the masonry aggregated 411,909 pounds.

Concrete Work—The total amount of concrete and large stone laid at Pedro Miguel was 10,736 cubic yards, as compared with 9,460 cubic yards during April. The concrete was placed, as follows: Four thousand six hundred and twenty-nine cubic yards in the north center guide wall; 1,215 cubic yards in the northwest wing wall; 1,202 cubic yards in the east wall; 562 cubic yards in the center wall; 1,877 cubic yards in the west wall; 727 cubic yards in the southwest wing wall; 460 cubic yards in the floors; and 64 cubic yards around ducts, 50 cubic yards of which were placed in operating tunnel "A", and 14 cubic yards in operating tunnel "C."

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours)	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	4.02
Average number of mixers per day	5.77
Average hourly output per mixer (actual working time) cu. yds	14.79
Large stone laid, cu. yds	....
Concrete laid, cu. yds	10,672.00
Total concrete laid, cu. yds	10,672.00

Mixing plant consisted of one 2-cubic yard mixer, and a daily average of 4.77 ½-cubic yard mixers. Placing plant consisted of a daily average of 4.77 ½-cubic yard mixers discharging directly into forms, and a daily average of 2.96 locomotive cranes and derricks.

In addition to the above, 64 cubic yards of concrete, placed around ducts in operating tunnels, were mixed by hand.

Miraflores Locks—The work of sinking and filling concrete caisson foundations for the north center guide wall was continued; likewise, the construction of the reinforced concrete wall base girders supported by the caisson piers and the reinforced concrete wall proper. Dry excavation, principally in the Canal prism south of the locks, was continued, five steamshovels being employed. Work was continued in connection with backfilling behind the east and west lock walls. During the month, the amount of iron placed in the masonry aggregated 433,097 pounds.

Concrete Work—The total amount of concrete and large stone laid at Miraflores was 92,085 cubic yards, as compared with 107,211 cubic yards during April. The concrete was placed, as follows: Four thousand one hundred and sixty-eight cubic yards in the north center guide wall, 20,705 cubic yards in the east wall; 38,447 cubic yards in the center wall; 23,784 cubic yards in the west wall; 3,663 cubic yards in the floors, and 1,328 cubic yards in the southeast wing wall.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	12.00	12.00
Average number of hours worked per day laying concrete and large stone (actual working time)	6.06	6.32
Average number of mixers per day	7.81	8.38
	Cu. Yds.	*Cu. Yds.*
Average hourly output per mixer (actual time)	56.96	17.86
Average amount of concrete and large stone laid per hour, per berm or chamber crane (actual time)	60.45	....
Large stone laid	....	....
Concrete laid	68,865.00	23,230.00
Total concrete laid	68,865.00	23,230.00

Permanent plant consisted of four berm cranes, and four chamber cranes placing concrete from 2-cubic yard auxiliary mixers.

Auxiliary mixing plant consisted of a daily average of 2.35 2-cubic yard mixers, and a daily average of 5.54 ½-cubic yard mixers. Auxiliary placing plant consisted of 4.19 ½-cubic yard mixers discharging directly into forms, and a daily average of 3.65 locomotive cranes and derricks.

DISTRICT NO. 2—DREDGING.

The following is a statement of the output of the five dredges which were in operation during the month, and of the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.		PLANT.		Total.	Remarks
		Earth.	Rock.	Earth.	Rock.		
		Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	
Cardenas	Dipper	2,600	7,650	1,600	....	11,850	Scow measurement
Corozal	Ladder	57,531	57,530	....	....	115,061	Place measurement
Marmot	Ladder	2,537	13,321	....	....	15,858	Place measurement
Badger	Ladder	....	....	56,521	2,787	59,308	Place measurement
Culebra	Suction	160,251	....	....	....	160,251	Scow measurement
Total		222,919	78,501	58,121	2,787	362,328	
Hydraulic excavation	....	*86,890	....	....	....	86,890	Place measurement
Grand total	....	309,809	78,501	58,121	2,787	449,218	

*Excavated from Canal prism, south of Miraflores lock site.

Note—The scow measurement for the dredge *Badger* is 110,674 cubic yards, or almost double the place measurement. This seems to indicate that slides from the bank under water have occurred.

CHAMÈ SAND EXCAVATION.

Approximately 65,641 cubic yards of sand were excavated at Punta Chamè and delivered at Balboa.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, and oil pipe lines were maintained and extended as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours)	16 00
Average number of hours per day (actual working time)	11.08
Average number of cubic yards crushed per hour, per working day	218.59
Average number of cubic yards crushed per working hour	352.78
Total output for the month, cu. yds	102,302.00

Relocation of Panama Railroad.

During the month, 8,377 cubic yards of material were excavated, increasing the total excavation at the close of the month to 10,177,136 cubic yards, and 40,065 cubic yards of material were placed in embankment, increasing the total for this purpose to 16,465,357 cubic yards.

No temporary trestle was driven during the month. At the end of the month, there were 64,512 linear feet of 70-pound, and 163,908 linear feet of 90-pound track. The force averaged 472 men.

Quartermaster's Department.

LABOR.

The force reports of the Commission and the Panama railroad show a decrease of almost 4,000 gold and silver employes since January 1, 1912, but the number of laborers in quarters remains almost constant.

QUARTERS.

The congestion continued in the Corozal and Pedro Miguel–Paraiso districts, all vacancies in bachelor and family quarters being filled. Provision was made to increase the quarters for gold bachelors in Corozal and Pedro Miguel.

MATERIAL AND SUPPLIES.

The value of material received during the month was $808,498.25. Supplies were delivered by 41 steamers, the total weight of cargo aggregating 38,505 tons, exclusive of lumber and piling.

On June 1st, 4,488,510 barrels of cement had been delivered under the contract with the Atlas Portland Cement Company. This contract called for 4,500,000 barrels, with an allowable increase of 15 per cent, of which the Commission is now taking advantage.

Subsistence Department.

The operation of the European laborers' messes, the colored laborers' kitchens, and the line hotels showed a net profit of $4,294.07. The operation of the Hotel Tivoli showed a net profit of $59.34. The net profit on subsistence operations was $4,538.53.

Department of Civil Administration.

COURTS.

During the month, 65 civil and 45 criminal cases were disposed of in the Circuit Courts, and 68 civil and 707 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for May amounted to $395,884.15, and the fees to $1,879.32. Receipts from stamp and card sales, and newspaper postage aggregated $6,450.42. The total collection of revenues made by the division was $18,517.13, and the collection on account of court fines, costs, and fees, $3,535.41.

Thirty-one vessels entered at, and 32 cleared from the port of Ancon, and 26 vessels entered and 27 cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 681, of whom 617 were men and 64 women. Twenty-eight nations, or 52 separate states and dependencies, were represented. The total number of arrests for the month was an increase of 40, as compared with the month of April. Eleven convicts were committed to the penitentiary and 12 were discharged, leaving 142 convicts in confinement at the close of the month. The cost of guarding and subsisting the convicts was $2,823.54, and the value of their work on Canal Zone roads was $2,577.50.

DIVISION OF FIRE PROTECTION.

Twenty-six fires were reported in the Canal Zone during the month, as compared with 45 in April. The damage to Commission property was $30.

DIVISION OF PUBLIC WORKS.

In the city of Panama the daily average consumption of water was 1,361,780 gallons, and in Colon, 1,343,773 gallons.

The usual inspection and maintenance work in this division was performed during the month.

DIVISION OF SCHOOLS.

The net enrollment in the white schools during the month was 1,240 and the average daily attendance, 904.7, or 94 per cent of the enrollment; and in the colored schools the net enrollment was 1,524 and the average daily attendance 688.4, or 80 per cent of the enrollment. Forty-six white, and 28 colored teachers were employed in the division on May 31.

Department of Sanitation.

The total number of deaths from all causes among employes was 33. These were divided, as follows: From disease, 19, from violence, 14, giving the annual average per thousand of 4.61 and 3.40, respectively, on the basis of the number of employes estimated by the Department of Sanitation. The annual average death rate per thousand among employes for the month of May, 1911, was 10.89.

The annual average death rate per thousand in the cities of Panama, and Colon, and in the Canal Zone, including both employes and nonemployes, based upon the population as estimated by the Department of Sanitation, was 19.01.

The average annual death rate per thousand for the month of May, 1911, among the same classes of population was 22.32.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: For whites, 1.95; blacks, 5.50, giving a general average for disease of 4.61. For the same month during 1910, the annual average death rate per thousand from disease was: Whites, 5.42; blacks, 4.55, giving a general average of 4.77; and for the same month during 1911: Whites, 5.81; blacks, 8.97, giving a general average of 8.17.

Among employes during the month, deaths from the principal diseases were, as follows: Bright's disease (chronic nephritis) five; lobar pneumonia, five; tuberculosis of the lungs, three; disseminated tuberculosis, one; cirrhosis of the liver, one; malaria, one; and organic disease of the heart, one, leaving two deaths from all other causes, and 14 from external violence.

No cases of yellow fever, smallpox, or plague originated on, or were brought to the Isthmus during the month.

Respectfully,
H. F. HODGES, *Acting Chairman.*

OFFICIAL CIRCULAR.

Method of Purchasing, Issuing, and Accounting for Commissary Coupon Books.

CULEBRA, C. Z., June 11, 1912.

CIRCULAR No. 256-F:

The following changes in the method of purchasing, issuing, and accounting for commissary coupon books will be effective July 1, 1912:

1. One style of commissary coupon book will be issued by both the Isthmian Canal Commission and Panama Railroad Company to be designated "Panama Railroad Company Commissary Book."

2. All commissary books will be purchased and received by the Panama Railroad Company, and will be distributed to all issuing clerks by the cashier upon approved requisition forwarded to him by the local auditor.

3. Employes of the Panama Railroad Company charged with the duty of issuing books will make requisition for same on the local auditor, as heretofore.

4. Employes of the Isthmian Canal Commission charged with the duty of issuing books will make requisition on the local auditor of the Panama Railroad Company, in duplicate, for commissary coupon books. Requisitions for hotel books and meal tickets will be made to the Examiner of Accounts on a separate form, one copy only being necessary.

5. The commissary department of the Panama Railroad Company will, with the approval of the Chairman and Chief Engineer, make such changes in the present form of commissary coupon books as may be desirable.

6. The validating stamp of the issuing clerk will hereafter appear on the inside of front cover, in space provided for that purpose, and also on the back of issuing coupon No. 2, which is to be forwarded to the Examiner of Accounts or local auditor of the Panama Railroad Company by issuing clerks of the Isthmian Canal Commission, or Panama Railroad Company, with the monthly collection report.

7. No. 1 issuing coupon will remain in the books; No. 2 will be forwarded with the reports at the close of each month. Coupons Nos. 3 and 4 will be discontinued.

8. Issuing clerks will be required to sign by initials only on the line provided for the name of the employe issuing the book.

9. The practice of stamping "Silver roll" on books issued to silver employes will be discontinued, instead of which all books issued to gold employes will be stamped "Gold roll."

10. The restrictions against issuing books during the last two and first four days of each month are removed. Hereafter, all coupon books will be issued during each working day, as far as practicable, and without the limitation as to the denomination or number of each heretofore in effect. Heads of departments and divisions are required to see that books are issued to employes with as little restriction or delay as possible. Two dollar and fifty cent commissary books will not be issued to gold employes.

11. The method of issuing books to employes for pay roll deduction will be supplemented by the sales for cash system to gold employes at the commissaries of the Panama Railroad Company, under such rules and at such places as have been approved by me, effective June 1, 1912.

H. F. HODGES,
Acting Chairman, Isthmian Canal Commission.
Second Vice-President, Panama Railroad Company.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, June 15, 1912. All heights are in feet above mean sealevel:

DAY AND DATE.	STATION.				
	Vigia	Alhajuela	Gamboa	Bohio	Gatun Lake
Sun., June 9	127.2	93.2	46.7	26.7	26.7
Mon., June 10	127.9	94.0	45.4	26 8	26.8
Tues., June 11	129.4	95.1	47.7	26.7	26.7
Wed., June 12	128 0	94.7	47.8	26 8	26.8
Thurs., June 13	127.5	94.3	46.6	26.8	26.8
Fri., June 14	126.4	93.2	45.5	26.8	26.8
Sat., June 15	128.4	94.4	48.5	27.1	27.1
Height of low water to the nearest foot	125.0	91.0	44.0		

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The Gorgona debating club has accepted the challenge of the Cristobal debating club for a double joint debate, to be held simultaneously at the Gorgona and Cristobal clubhouses, Wednesday, June 26, and has selected the following subject: *Resolved*, That nations should disarm in the interests of peace." Each club will be represented by two teams of two men each, an affirmative and a negative team, the affirmative teams to remain at home and advocate the proposition, and the negative teams to visit the opposing clubs. Three judges will be appointed from the audience by the chairman of the respective meetings, their decision to be based on the merits of the arguments. Twenty minutes will be allowed each speaker and twelve minutes for the rebuttal. Cristobal has arranged to use the large hall for the debate and has extended an invitation to every one, ladies included. Its representatives will be Messrs. Dinnin and Kromer for the affirmative, and Messrs. Weaver and Matthews for the negative. Gorgona's representatives will be finally chosen at this week's meeting.

CULEBRA.

Gatun bowled at Culebra Saturday evening, with the following results:

Culebra.				Gatun.			
Mengel	98	86	92	Brennan	81	83	93
Palmer	105	82	91	Mock	77	83	81
Grier	82	79	71	Harper	81	100	105
Hill	93	94	86	Wilson	88	90	67
Case	94	93	87	Mohen	73		
				Hughes		77	54
Total	472	434	427		400	433	400

This was the closing game of the league, and places Culebra in second place.

The high scores of the week in duckpins were: Silver, 121; Plato, 109; Palmer, 105.

All the men interested in the athletic meet on the Fourth of July should sign the entry blank, and come out for practice.

The 1,000 point game of billiards between Conlon and Tragsdorf, the winning team of the Isthmian billiard tournament, was closed on Friday night, with 600 points due to Conlon being transferred to Cristobal. The scores were: Conlon 558 points; Tragsdorf 600 points. This gives Tragsdorf the championship in billiards in the Zone.

EMPIRE.

The Empire duckpin bowling team lost two out of three games Saturday, June 15 to the Cristobal team. Scores·

Empire.				Cristobal.			
Goolsby	85	79	91	Barrett	106	83	86
N. Giavelli	104	68	72	M. Cotton	91	77	82
L. Giavelli	84	94	85	C. Cotton	79	91	86
King	86	74	82	Orr	80	76	87
Gorham	79	80	98	Weston	82	76	87
Total	438	395	428		438	403	428

The first and third games were a tie. In the roll-off each team won one game.

A local political tenpin tournament has been started, and the following teams have entered: Progressives, Democrats, Socialists, Independents, Standpatters.

There is still time to register in the beginners' class in Spanish, which meets every Tuesday and Thursday night.

GORGONA.

Mr. George Stoehr has been appointed manager of the bowling alleys in place of Mr. Steve Haggerty who has left for his home in the United States. Mr. J. C. Deavours has been appointed manager of the pool room in place of Mr. Joe Orr who recently left the Isthmus.

Mr. G. W. Watson has arrived and has succeeded Mr. J. T. Hopkins as assistant secretary and physical director. Mr. Watson is training a squad for the Fourth of July meet at Ancon, July 4. Monday, Wednesday, and Friday at 5.15 and 7.45 p. m., will be practice periods for the meet. A training table will be established at the Gorgona hotel during the last two weeks before the meet.

Those interested in basketball are looking forward to the proposed local league to be started July 15.

The boys' gymnasium classes will meet on Monday and Wednesday at 3.45, and Saturday at 9.15 p. m.

The "Red Sox" lead, with the "Athletics" and "Reds," following, in the leaders' league membership contest. Powell leads high batting average with Deavours second. Hilty, Dixon, Hosden, Nagle, Le Sassier, Moyer, Deyo, Carpenter, Kuentz, Cogan, Emery, Goree, W. A. Jones, Clements, Douglass, Ellington, Boster, Halderman, Simka, Geisshart Lynch, and Keenan have scored in the contest.

CRISTOBAL.

On Friday evening, June 14, Rev. Father Cooper delivered an illustrated lecture under the auspices of the debating club, the lecture being on Guatemala. Many instructive views were presented. He has been asked to give another lecture with personal experiences, on the same country soon.

On Saturday evening, June 15, the Empire duckpin bowling team took two out of three games on the local alley, while the visiting team at Empire took two out of three on Empire's alleys. This, however, did not affect the standing of the teams which gives to Cristobal first place, thus winning the Isthmian duckpin tournament. The standing of the teams follows:

Team.	Won.	Lost.	P. C.
Cristobal	43	17	.716
Culebra	37	23	.601
Empire	34	26	.566
Camp Elliott	32	28	.533
Gorgona	18	42	.300
Gatun	16	44	.266

Highest average—Pinney, Empire, 27 games, pinfall 2,589, percentage, 95-24|27 per cent; second high average—Herring, Cristobal, 27 games, pinfall, 2,575, percentage, 95-10|27; third high average—Huttlemaier, Gatun, 30 games, pinfall 2,858, percentage 95-8|30 per cent.

G. R. Herring wins the Putnam medal for the highest average in duckpins for two consecutive months.

A new Royal massage electric machine has been placed in the barber shop.

GATUN.

Gatun won second place in the recent Isthmian billiard tournament. Gatun's players were Louis Townsley and Charles C. G. Wurster.

The Gatun checker club played a match game with the checker players of the Cristobal clubhouse on Wednesday evening, June 12. The results were:

	Won.	Lost.	Draw
Gatun	34	11	5
Cristobal	11	34	5

The individual scores of the Gatun players were, as follows:

	Won.	Lost.	Draw
Acher	8	1	1
Gartrell	7	1	2
Chatfield	7	2	1
Kuenhle	7	2	1
West	5	5	0

Gatun has also received challenges from Camp Elliott and Gorgona, and will probably play at the latter place on June 22. The Gatun clubhouse is encouraging the proposition of an all-Isthmian chess and checker tournament.

The comic opera entitled, "Sinbad the Sailor," will be given by the Gatun dramatic club during the last week of June.

Huttelmaier of Gatun won third place for high average in the Isthmian duckpin tournament.

Rainfall from June 1 to 15, 1912, Inclusive.

Stations.	Maximum in one day.	Date.	Total for period.
Pacific Section—	Ins.		Ins.
Ancon	2.05	15	2.17
Balboa	2.16	15	2.81
*Miraflores	1.25	15	2.23
Pedro Miguel	2.50	15	3.12
Rio Grande	1.58	15	2.96
Central Section—			
Culebra	1.68	15	3.99
*Camacho	1.27	15	4.47
Empire	1.63	15	5.26
Gamboa	2.83	15	6.04
*Juan Mina	2.39	15	7.64
Alhajuela	1.87	15	6.88
*El Vigia	2.27	15	10.24
*Gorgona	2.66	15	8.37
*Frijoles	3.78	15	6.95
*Monte Lirio	1.75	15	6.58
Atlantic Section—			
Gatun	1.86	15	6.54
*Brazos Brook	1.92	8	8.84
Colon	2.52	3	6.19
†Porto Bello	2.76	3	†8.49

*Standard rain gage—readings at 5 p. m., daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., June 14.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 26, 1912. (75th meridian time):

Date.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
June 20	......	1.13	7.45	1.45	7.45
June 21	......	2.07	8.20	2.42	8.43
June 22	......	3.06	9.18	3.43	9.48
June 23	......	4.07	10.20	4.47	10.58
June 24	......	5.10	11.23	5.50	......
			P.M.		
June 25	12.07	6.13	12.25	6.50	......
June 26	1.12	7.13	1.24	7.45	......

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steamship Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line.

NEW YORK TO CRISTOBAL.

Allianca	P. R. R.	Friday	June	14
Colon	P. R. R.	Friday	June	21
Advance	P. R. R.	Thursday	June	27
Panama	P. R. R.	Wednesday	July	3
Allianca	P. R. R.	Tuesday	July	9
Colon	P. R. R.	Monday	July	15
Advance	P. R. R.	Monday	July	22
Panama	P. R. R.	Saturday	July	27
Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Friday	June	21
Allianca	P. R. R.	Thursday	June	27
Colon	P. R. R.	Wednesday	July	3
Advance	P. R. R.	Tuesday	July	9
Panama	P. R. R.	Monday	July	15
Allianca	P. R. R.	Sunday	July	21
Colon	P. R. R.	Sunday	July	28
Advance	P. R. R.	Saturday	Aug.	3
Panama	P. R. R.	Friday	Aug.	9

NEW YORK TO COLON.

Prinz August Wilhelm	H.-A.	Saturday	June	15
Turrialba	U.F.C.	Saturday	June	15
Metapan	U. F. C.	Wednesday	June	19
Prinz Sigismund	H.-A.	Saturday	June	22
Trent	R. M.	Saturday	June	22
Tivives	U. F. C.	Saturday	June	22
Zacapa	U. F. C.	Wednesday	June	26
Prinz Joachim	H.-A.	Saturday	June	29
Sixaola	U. F. C.	Saturday	June	29
Almirante	U. F. C.	Wednesday	July	3
Prinz Eitel Friedrich	H.-A.	Saturday	July	6

COLON TO NEW YORK.

Almirante	U. F. C.	Thursday	June	20
Prinz Eitel Friedrich	H.-A.	Monday	June	24
Magdalena	R. M.	Tuesday	June	25
Carrillo	U. F. C.	Tuesday	June	25
Santa Marta	U. F. C.	Thursday	June	27
Prinz August Wilhelm	H.-A.	Monday	July	1
Turrialba	U. F. C.	Tuesday	July	2
Metapan	U. F. C.	Thursday	July	4
Carrillo	U. F. C.	Saturday	July	6
Prinz Sigismund	H.-A.	Monday	July	8
Tivives	U. F. C.	Tuesday	July	9

NEW ORLEANS TO COLON.

Abangarez	U. F. C.	Saturday	June	15
Heredia	U. F. C.	Wednesday	June	19
Atenas	U. F. C.	Saturday	June	22
Orleanian	U. F. C.	Wednesday	June	26
Parismina	U. F. C.	Saturday	June	29
Cartago	U. F. C.	Wednesday	July	3
Abangarez	U. F. C.	Saturday	July	6

COLON TO NEW ORLEANS.

Parismina	U. F. C.	Thursday	June	20
Cartago	U. F. C.	Thursday	June	20
Abangarez	U. F. C.	Thursday	June	27
Heredia	U. F C.	Thurdsay	June	27
Atenas	U. F. C.	Thursday	July	4
Orleanian	U. F. C.	Thursday	July	4
Parismina	U. F. C.	Thursday	July	11

Misdirected Letters.

ANCON, C. Z., June 19, 1912.

The following insufficiently addressed letters, originating in the United States, and its possessions, have been received at the office of the Director of Posts, and may be secured upon request of the addressees:

Abramson, John
Bergoon, B. J.
Bevington, Harry W.
Bouche, A. F.
Brouster, Earnest
Burk, Joe
Campbell, John
Carter, Mr.
Coffey, M. E.
Clark, Mr. and Mrs. F. C.
Cummings, Mrs. M. J.
Cunningham, Miss Sadie (pkg.)
Duncan, F. R.
Dusthiemer, Clarence
Elmore, John
Johns, Dr. F. M.
Leonard, Clarence E.
McKenzie, Miss Maggie
Marris, Algier
Martinez, Anselmo
Mitchell, J. P.
Ordway, Miss Ellen M.
Otis, Albert N.
Potter, R. B.
Pryce, Miss Caroline
Sandiford, Evans
Small, Viccy
Small, Walter
Stapleton, Richard J.
Titus, Dr. E. L.
Tostige, Henry
Warren, J. Crittenden
Whelan, Fent
Woodbridge, Mrs.
Zion, Samuel

LOST—Between East Balboa and Ancon, a purse containing a sum of money and two checks. Finder is requested to return same to Ancon police station.

LOST—In the vicinity of the commissary, Camp Bierd, at about 5.15 p. m., June 8, one gold watch fob composed of eleven Costa Rican gold coins and one American gold piece, fastened together by gold chain links. Finder will please return to the Canal Zone police station, Cristobal, and receive reward.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JUNE 26, 1912. No. 44.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Parcels Posts for the Canal Zone.

The department of Civil Administration has been authorized by the Acting Chairman and Chief Engineer to submit plans for a system of parcels posts effective between points in the Canal Zone. At this time, the Canal Zone Government, in common with that of the United States, transacts parcels post business with 53 states and provinces, including all the greater nations of the world, with the exception of Russia. Until a parcels post system has been established in the United States, however, it is not probable that the postal authorities of the United States would consent to an interchange of parcels post deliveries between the United States and the Canal Zone without direct legislation. But there is nothing to prevent the establishment of a local system for interstate exchange between Canal Zone offices.

Closing of Spillway Sluice Gates at Gatun.

The sluice gates in the ogee of the Spillway dam at Gatun, which were opened on June 5 to obviate flooding the caisson dam sills in the approach to Gatun Locks, on which some work remained to be done, were closed again on June 19. The surface of Gatun Lake was then 27.5 feet above sealevel and in the week following had risen to elevation plus 29.37 feet. The point at which future interference by the lake with the work in the locks might occur is the sills for the upper guard gates. Should the lake rise and flow over these it would flood the lock chambers. The tops of the sills are at elevation 37 feet four inches above sealevel, and efforts are being made to complete and close the upper guard gates before the surface of the lake will have reached that level. The west leaf for the gate in the east approach passed final inspection on June 26, and is ready for closing. On the same day the water test for the other leaf of the gate was begun. After the completion of the test, which will take several days, the bearing plates and sills remain to be adjusted. In the west approach, neither leaf of the upper guard gate is completed, but it is anticipated that the gate can be closed and made watertight within a few weeks. The miter gate moving machines for two of the leaves are installed and ready for use.

Whistling Buoy at Porto Bello.

During recent heavy weather the whistling buoy on Salmadina Bank, in the approach to Porto Bello, became detached from its moorings and stranded near the shore, opposite its original position. The buoy was recovered, is being repaired, and will shortly be reestablished at its former location.

Highest Steamshovel Record.

Steamshovel No. 257, (S. I. Lyons, engineer, and E. E. Austin, craneman,) working in the west borrow pit of Gatun Dam, excavated a total of 84,519 cubic yards. place measurement, in the month of May—26 working days—or an average of 3,250 cubic yards per day.

This is the highest monthly record for a shovel of any class since the beginning of operations on the Isthmus.

The six steamshovels, two 91-ton, and four 70-ton, working in borrow pits for Gatun Dam, and excavating for the hydroelectric plant, excavated a total of 287,107 cubic yards, place measurement, for the month of May.

The following table classifies the material excavated, and indicates the yardage of each shovel by place measurement:

Shovel No.	Cubic Yards.			No. of working days.
	Earth.	Rock	Total	
116	22,905	25,905	48,810	26
117	28,244	....	28,244	20
120	21,917	21,765	43,682	26
134	9,041	18,441	27,482	19
257	42,259	42,260	84,519	26
263	16,311	38,059	54,370	26
Total	140,677	146,430	287,107	....

Additional Pumping Facilities at Gamboa.

Owing to the low stages of water in the Camacho reservoir at Empire, and in the Carabali reservoir at Gorgona, due to the unusually light rainfall in those localities up to June 7, it was decided to transfer the pump, formerly used in sluicing earth from the face of the rock in the Porto Bello quarry, to the bank of the Chagres River at Gamboa to furnish additional facilities there. This pump has a capacity of 1,500 gallons of water a minute, working against a head of 250 pounds pressure, but it is believed that it will not be necessary to operate it against a head of more than 175 pounds pressure in the new service. Two centrifugal pumps have been supplying water along both banks of the Canal, between Culebra and Gorgona, since January 24. A 6-inch pipe supplies the needs on the east bank of the Canal, while 8-inch, 10-inch, and 12-inch lines extend along the west side of the Canal, supplying water at West Culebra, Empire, Las Cascadas, Camp Elliott, Bas Obispo, and Gorgona. At Gorgona, Chagres River water is used only for mechanical purposes; that for domestic use being taken from the Carabali reservoir, which has remained about stationary with only this demand upon it. Under the new arrangement, it is proposed to use the two centrifugal pumps to supply the 8, 10 and 12-inch lines, and the new pump to supply the 6-inch, working independently, but with crossovers from one side of the Canal to the other to equalize the pressure. Since June 7, several hard showers have occurred in this territory, and the water in the reservoirs has risen in consequence. Analyses of Chagres River water made thus far show that it compares well in potability with the water in the Canal Zone reservoirs.

Ancon Hospital Farm Operations.

Twenty-five cows have recently been added to the Ancon Hospital dairy farm, increasing the total to 125 head. The latest arrivals are mixed breed Jerseys, and were in very poor condition when they reached the farm. All of them were dry, but under improved feeding conditions, six have begun to give milk. The cows are housed in two stables, the larger one erected shortly after the beginning of the hospital farm operations, and the other converted out of an old French building. The Jerseys, Herefords, and other breeds are housed in the larger stable, and the Holsteins in the smaller, which, in addition, serves as a storehouse for feed. A short time ago it was found necessary to install new feeding troughs in the larger stable, as well as bars for keeping the cows in their places, the wooden, unsanitary ones having fallen into decay. The new troughs are built of concrete, while the bars are constructed of galvanized iron pipe. The latter embody the idea, but are a considerable improvement over the cumbersome wooden bars, held in place by wooden pegs, in common use. They consist of two upright rows of pipes, wide enough apart to accommodate the cow's neck, turning upon pivots attached to two longitudinal rows of pipes extending the length of the stalls. One of the upright pipes is in two sections, which can be joined together, or opened, by moving a bolt, which fits into it, up or down.

The present output of milk from the dairy is about 260 quarts daily. There has been some improvement in the production since the advent of the rainy season, for, while the cows are fed largely on imported material, such as cottonseed hulls and meal, bran, and sucrene, it requires better pasturage to increase the milk supply. An imported feed known as calfalfa was formerly used to a considerable extent, but an increase in price made its use unprofitable. Sucrene, a compound of cottonseed meal, gluten feed, molasses, oat clippings, and ground and bolted screenings, has taken its place to a certain extent. During the past year the dairy end of the farm has shown up well, and there has been only a slight mortality in the herd.

Another feature which is making favorable

NOTES OF PROGRESS.

(Continued.)

progress is hog raising, an experiment begun within the past eight months. There are now 62 pigs, large and small, in the drove, 43 ranging from suckling pigs to porkers weighing 150 pounds. The sows were all purchased locally and consist of the better grades of native stock. The only imported member of the drove is a Berkshire boar brought from New York State. The pigs of the first lot raised on the farm are large enough to be killed. The only feed given the hogs, apart from what they can root up in the yard, is swill from the hospital kitchen. One or two of the litters failed to come up to average, but curiously enough, the smallest sow in the lot recently gave birth to the record litter at the hospital farm to date, namely, nine.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 89 per cent completed, 201,748 cubic yards, out of a total of 225,000, having been placed at the close of work on June 22. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
June 17	108	5.30	1
June 18	136	7.15	1
June 19	128	7.15	1
June 20	32	2.00	1
June 21	92	5.30	1
June 22	100	6.30	1
Total	596	34.00	1
Previously reported	201,152		
Grand total	201,748		

Lock End of Pedro Miguel Dam.

Following the removal of the railway tracks which crossed the site of Pedro Miguel dam near the locks, the core of the dam has been extended and the central portion of it has reached the west backfill. Excavation is being made east of the present fill for the core, for the concrete return and core wall, which is to extend from the end of the northwest wing wall of the locks and be surrounded in part by the lower end of the dam. A pit 12 feet wide and about a hundred feet long is being sunk to bed rock by hand, with derrick and buckets, for the outer portion of these joining walls; and the space between the pit and the wing wall will be excavated by steam-shovel. In preparation for this, railway connections with the west upper approach chamber will be made with tracks on the west side of the dam, from the Cerro Luisa end, and tracks which now cross the interval between the pit and the wing wall will be removed.

Canal Equipment and Supplies.

The Quartermaster's Department carries in its records, a complete list of material and supplies in stock on the Isthmus. An inventory as of June 30, 1912, is in course of preparation, which will show a total, including valuation, of all material and supplies on hand at the close of the fiscal year 1912.

There is also carried in the Quartermaster's Department, a list by units, of all plant and equipment. This list was inaugurated October 1, 1911, and is now being completed and brought up to date, giving that acquired from the French Canal Company separately from that purchased by the United States.

This list will also be brought down to the close of the fiscal year 1912, and will show original cost, date of purchase, from whom purchased, and physical condition June 30, 1912. From this data, catalogues can be prepared from time to time when the plant units become surplus and are offered for sale.

The Secretary of the Interior was furnished a list on February 25, 1912, of equipment in service of the Isthmian Canal Commission, suitable for railroad construction work, with approximate dates of release from the service here.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration building, Ancon, on July 3. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration building at 8 a.m., on July 3, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their ability properly to operate an automobile, and must have the automobile with them.

CONCRETE WORK IN THE LOCKS

Over 87 per cent of the concrete for the locks is in place. the amount at the close of work on June 22 being 3,768,695½ cubic yards, out of a total of approximately 4,302,563. A total of 19,213 cubic yards of concrete was laid in the locks during the week ending June 22.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on June 22 being 1,878,885½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending June 22, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	
June 17	126	2.16	2					126
June 18	182	3.08	2					182
June 19	232	2.16	2					232
June 20	306	5.16	2					306
June 21	156	1.56	2					156
June 22	304	5.08	2					304
Total	1,306	20.00	2					1,306
Previously reported								1,877,579½
Grand total								1,878,885½

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 96 per cent completed. 855,630 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on June 22. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	
June 17	176	4.50	1	216	28.50	5		392
June 18	260	6.50	1	203	20.00	5		463
June 19	150	4.00	1	193	25.50	5		343
June 20	196	5.00	1	205	25.50	5		401
June 21	330	8.00	1	177	25.50	5		507
June 22	212	5.50	1	298	28.50	5		510
Total	1,324	33.50	1	1,292	153.50	5		2,616
Previously reported							4,468	853,014
Grand total							4,468	855,630

MIRAFLORES LOCKS.

Over 73 per cent of the concrete for the system of two twin locks at Miraflores was in place on June 22, the total amount on that date being 1,034,180 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
June 17	786	18.50	7	1,202	17.75	3	279	39.00	5		2,267
June 18	1,128	28.08	6	1,326	19.00	2	358	38.50	5		2,812
June 19	500	17.67	6	1,398	20.42	3	353	34.50	7		2,251
June 20	818	21.58	6	1,348	19.60	3	287	33.00	5		2,453
June 21	546	14.92	6	1,560	23.27	3	366	38.50	8		2,472
June 22	1,110	26.42	7	1,680	26.50	3	246	28.00	7		3,036
Total	4,888	127.17	6.33	8,514	126.54	2.83	1,889	211.50	6.17		15,291
Previously reported										3,693	1,018,889
Grand total										3,693	1,034,180

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The eleventh biennial convention of the General Federation of Women's Clubs will be held in San Francisco, California, on June 25 to July 5. This is the first time since its affiliation with the General Federation that the Canal Zone Federation has not sent delegates to the biennial convention, the reason being largely one of distance. The Canal Zone Federation was organized on October 12, 1907, and federated at the biennial convention held in Boston in June, 1908. Mrs. Thomas E. Brown, Jr., was its representative at that meeting. At the Cincinnati convention, in June, 1910, Mrs. Hiram J. Slifer represented the Zone Federation. A report of the work of the Canal Zone Federation for the biennial period has been forwarded and will appear in the published report of the eleventh biennial, which will be issued in August, 1912.

The fifth year of the Gatun Woman's Club closed with a tea held at the Commission clubhouse on Thursday afternoon, June 6. The club will resume its meetings on October 10. During the recess, informal meetings will be held at frequent intervals in order that the business of the club may be transacted. The season just closed has extended over a period of eight months. During this time the club has held semimonthly meetings, alternating business and social sessions. At the social meetings, programs have been given, papers being read on topics of general interest. There was one social gathering to which the members invited their friends; two afternoon teas have been given, and one charity ball was held. The club assisted the Christmas committee with its preparations for the community celebrations. During the vacation period, the club secretary, Mrs. Charles H. Stoddard may be addressed on all matters pertaining to the business of the club.

The Empire Women's Club is still holding regular meetings and will continue open through the season. All the other clubs are taking a recess.

Miss MacLaren's Entertainments.

Miss Gay Zenola MacLaren, who has been playing at the Canal Zone clubhouses, and who appeared in Ancon on June 19, has been booked for two additional performances at Ancon Hall. On Friday evening, June 28, she will play Broadhurst's comedy, "Bought and paid for," and on Monday evening, July 1, a dramatization of Kate Douglas Wiggin's book, "Rebecca of Sunnybrook Farm" will be given. Miss MacLaren will play at Pedro Miguel on Saturday evening, June 29. The performances will begin at 8.15 o'clock in each case.

United Spanish War Veterans.

The second annual inspection and muster of Chagres Camp, No. 2, U. S. W. V., will be held in Kangaroo hall, at Empire, on Saturday evening, June 29, at 8 p. m. All members of Colonel Sibert Camp, No. 1, U. S. W. V., American Veterans of Foreign Service, and of the Army and Navy Union, are cordially invited to attend.

High School Notes.

The high school graduation exercises will be held at the Gatun clubhouse on Friday night, June 28. A special train will be run, in accordance with the schedule given below. No tickets will be required on this train. The public is invited.

NORTHWARD.

		P. M.
Leave	Panama	5.45
	Corozal	5.50
	Pedro Miguel	6.02
	Culebra	6.14
	Empire	6.19
	Las Cascadas	6.24
	Bas Obispo	6.30
	Matachin	6.34
	Gorgona	6.40
Arrive	Gatun	7.40

SOUTHWARD.

		P. M.
Leave	Gatun	10.00
	Gorgona	10.50
	Matachin	10.56
	Bas Obispo	11.00
	Las Cascadas	11.06
	Empire	11.11
	Culebra	11.16
	Pedro Miguel	11.28
	Corozal	11.40
Arrive	Panama	11.45

The baccalaureate services were held at the Gatun clubhouse on Sunday, June 23, at 9.30 a. m., with Mr. C. C. Carr in charge. The sermon was preached by Major Henry A. Brown, Commission chaplain, his subject being "Education–Religion." Prayer was offered by Rev. C. O. Purdy, and solos were sung by Mrs. Vaughn, and Mr. Weston of Cristobal. Mrs. Farmer acted as accompanist, and Mr. Smith led the congregational singing.

Obituary.

Henry Schwartz, an employe of the Mechanical Department at Pedro Miguel, died at Colon Hospital on June 18. He was 46 years of age, single, and had been on the Isthmus seven years. He is survived by a brother living at Balboa.

Killed by a Train.

Felipe Cedoya, a Spanish laborer, check No. 18,200, was run over and killed not far from Bridge 52, near Bas Obispo, on Sunday evening, June 23, by a Panama railroad train. So far, the number of the train that struck him has not been ascertained, but it is believed to have been one south bound. Cedoya lived at Haut Obispo.

The Gorgona Catholic Club will hold a dance at the clubhouse on Saturday evening, June 29.

Corrections in Canal Medal and Bar Lists.

A list of corrections and changes to be made in the service medal and bar lists recently published in The Canal Record is given below. Distribution of medals and bars will take place in September, unless unforeseen delays occur. To employes whose services may have terminated by that time, delivery of medals and bars will be made from the Washington Office, and much unnecessary delay, as well as correspondence, will be obviated if all changes of address are promptly reported to the above office. The medal list for 1910–12 will not be compiled until the close of the current year, and the distribution of the medals and bars for same will not take place until September, 1913.

I. C. C. MEDAL LIST—1909–1911.

Hamill, Michael, January 25, change to Hamill, Michael, Jr.
Steele, Russell L., March 3, omit, is on first bar list.
Woods, Lewis F., March 5, change to Woods, Louis F.
Daly, Jay, March 23, change to Daly, J. E.
MacNeil, Henry T., April 3, change to Macneil, Henry T.
Fraser, Guy O., April 17, change date to April 16.
Cross, Laura L., April 27, change to Cross, Laura A.
Langvardt, Neils, May 1, change to Langvardt, Niels
Greene, Wendell, May 5, add name to list.
Peterson, Mauremus, May 11, change to Peterson, Maurenus.
Forde, Arthur A., June 8, add name to list.
Whitsel, Frank H., June 22, add name to list.
Noland, C. P., July 1, omit name from list.
O'Shea, Patrick, July 17, change to O'Shea, Patrick P.
Fonda, Gorge H., July 31, change to Fonda, George H.
Zidbeck, Gustav, August 2, add name to list.
Huff, William, September 3, change to Huff, William E.
Peak, Albert F., September 3, change to Peak, Alfred F.
Hait, Henry, September 12, add name to list.
Raper, William, September 20, change to Raper, William K.
Morrison, Harry, October 13, add name to list.
Boogs, Reinhard A., October 14, change to Boggs, Reinhard A.
Uderitz, George, October 19, change to Uderitz, George W.
Marshall, W. J., October 20, add name to list.
Koch, Jacob, October 32, change date to October 31.
Fleming, William, November 6, add name to list.
Patterson, Marian, November 21, change to Borgen, Marian P.
Freelove, Charles, December 2, change to Freelove, Charles T.
Witmer, George S., December 3, add name to list.
Thompson, Edward, December 14, omit name from list
Olsen, John F., December 18, add name to list.

I. C. C. BAR LIST—FIRST.

Long, John N., February 8, change to Long, John H.
Kidhle, Fred E., April 10, change to Kiehle, Fred E.
Bruck, Harry W., April 14, omit one of the names.
Fulford, Louis, May 23, change to Fulford, Rufus.
Fox, Egbert G., May 30, change to Fox, Egbert H.
Ruby, Clyde K., June 20, change to Rudy, Clyde K.
Fleming, Harry V., July 16, omit, belongs on second bar list.
Boyland, Harry H., September 2, change to Boylan, Harry H.
Eagan, John F., October 14, change to Egan, John F.
Beattie, J. Maclslin, October 15, change to Beattie, J. Macklin.
Clarke, John A., October 22, change to Clarke, John H.
Lampson, Orson W., October 27, change to Lampson, Orson R.
Cummings, Michael, J., December 8, change date to December 9.

I. C. C. BAR LIST—SECOND.

Cantwell, Matthew D., May 5, omit from list.
Rosenbaum, Alex. R., August 25, change to Rosenbaum, Alex. L.
Huston, J. Frank, October 10, change to Houston, J. Frank.
Beam, Walter I., October 23, add name to list.

P. R. R. MEDAL LIST.

Brooks, John C., Jr., February 26, add name to list.
Neal, T. E., June 1, change date to June 2.
Rhoden, N., August 12, change to Rohden, N.
Decora, J. G., August 20, change to DeCora, J. G.

P. R. R. BAR LIST—FIRST.

Rotherford, F. A., January 29, change to Rutherford, F. A.
Ganserit, R. G., May 20, change to Gansereit, R. G.

P. R. R. BAR LIST—SECOND.

Price, Harvey, April 28, change date to April 24.

Married.

WARDLAW–MARTIN—On Thursday, June 6, at the home of the bride's sister, Miss Nellie Grey Martin of Calypso, N. C., to Mr. James Langdon Wardlaw of Oxford, Miss., the Rev. Carl H. Elliott officiating. Canal Zone residence, Empire.

FILLITER–VON OFEN—On Saturday, June 1, at St. Luke's Hospital Chapel, Ancon, by the Rev. H. R. Carson, Agnes Brunhild von Olen of Liegnitz, Silesia, Germany, to D. F. S. Filliter of Dorset, England.

FLETCHER–HUNTER—In the Union Church, Cristobal, on Thursday, June 20, Mary Louise Hunter of Brooklyn, N. Y., to Mr. Cecil Gary Fletcher of Accomac, Virginia, Rev. Carl H. Elliott officiating. Isthmian residence, Colon.

MCKEE–OGG—In the Union Church, Cristobal, on Friday, June 21, Effie May Ogg of Mount Vernon, Ohio, to Mr. James Otis McKee of Coshocton, Ohio, Rev. Carl H. Elliott officiating. Canal Zone residence, Culebra.

BERESFORD–HALE—At Empire, on June 15, Ida M. Hale of Paraiso, to Mr. George Beresford also of Paraiso, the Rev. A. A. Nellis officiating. Canal Zone residence, Paraiso.

MALSBURY–SCHUBER—At Ancon, on Saturday evening, June 22, Carmen Schuber, daughter of Mr. and Mrs. James Buchanan Schuber of Panama, to Mr. Omer, E. Malsbury, Chaplain Henry A. Brown officiating in the first ceremony, at his residence, and Rev. Henry Pouget at the second service at the chapel of the Sacred Heart. Canal Zone residence, Culebra.

FOURTH OF JULY.

Outline of Program for Celebration at Ancon and Balboa.

The program for the observance of Independence Day at Ancon and Balboa on July 4 is, as follows:

MORNING.

Patriotic exercises at the Ancon baseball park, beginning at 9.15 o'clock. Tennis tournament, finals in singles, at 10 o'clock. Athletic events at the ball park at 10 o'clock. The I. C. C. band will furnish music during the patriotic exercises, and the band of the Marine Corps during the athletic contests.

AFTERNOON.

Fire department exhibition at 1.45 o'clock. Baseball game between picked teams at 2.45 o'clock. Tennis tournament, finals in doubles, at 3 o'clock. Aquatic events at Balboa at 3.30 o'clock. The Tenth Infantry Band will play at the ball park, and the Band of the Marine Corps, at Balboa docks.

EVENING.

Fireworks at 7.30 o'clock. Dance at Hotel Tivoli, beginning at 9 o'clock. The Tenth Infantry and I. C. C. bands will give concerts during the fireworks display.

Three 2-story buildings at rear of Hotel Tivoli, facing ball park, have been reserved for rest and dressing rooms—No. 46 for athletes. No. 47 for men, and No. 50 for women and children. Maids will be in attendance in house No. 50. Toilet rooms in Ancon schoolhouse reserved for women and children exclusively. Free check room in lodge hall.

Ice water and sanitary drinking cups may be found at Hospital gate, schoolhouse, ball park, Ancon market, and Zone boundary on Tivoli road.

A physician will be in attendance at Balboa dispensary during water sports, and at Ancon dispensary all day.

Information bureau and headquarters of refreshment committee will be at Ancon market until 9 a. m., when they will be transferred to the Hotel Tivoli.

Lunch will be served from 11 a. m. to 1 p. m., to men unaccompanied by women or children, in space between ball park and bachelor quarters at rear of Hotel Tivoli, and to women and children and their escorts at Ancon schoolhouse.

A member of the subcommittee on prizes will be present, near the judges' stand, at each of the places where events are to take place, who will be prepared to pay all cash prizes.

If the medal prizes, which are now on order in the United States, arrive in time they will be presented on the Fourth; otherwise, presentation will be made by Mr. A. C. Fechtig, chairman, committee on prizes, as soon as they arrive.

Independence Day Banquet.

The citizens of Gorgona will hold an Independence Day banquet on Wednesday evening, July 3, at the Commission hotel, when Col. Geo. W. Goethals will be the guest of honor. The object of the event is to furnish an opportunity for the residents of the village to gather socially before the abandonment of the village. There will be addresses by Mr. H. H. Rousseau, and a number of others. The Marine Band will play. The arrangements are in the hands of a central committee, the members of which are: Messrs. C. E. Whipple, chairman, F. Morrison, A. F. Cameron, R. C. Shady, and A. L. Robinson. Provision will be made for 350 guests.

PANAMA RAILROAD COMPANY.

TIME TABLE FOR PASSENGER SERVICE ON JULY 4, 1912.

Supplement No. 1 to Current Time Table No. 12, Effective from 4 a. m., Thursday, July 4, to 3.45 a. m., Friday, July 5, Only.

STATIONS.	SOUTHWARD.								
	First Class.								
	135	133	131	129	127	125	123	121	119
Leave.	P.M.	P.M.	P.M.	P.M.	A.M.		A.M.	A.M.	
Colon	11.25	7.05	4.05	1.05	10.05	......	6.30	6.15	......
Mount Hope	s11.30	s7.10	s4.10	s1.10	s10.10	......	s6.35	s6.20	......
Mindi	11.36	7.15	4.15	1.15	10.15	......	6.40	6.25	......
New Gatun	s11.41	s7.21	s4.21	s1.21	s10.21	......	s6.46	s6.31	......
Gatun	s11.47	s7.27	s4.27	s1.27	s10.27	......	s6.52	s6.37	......
Quebrancha	11.56	7.36	4.36	1.36	10.36	......	7.01	6.46	......
Monte Lirio	A.M. s12.02	s7.42	s4.42	s1.42	s10.42	......	s7.07	s6.52	......
Bohio	12.08	7.48	4.48	1.48	10.48	......	7.13	6.58	......
Frijoles	s12.14	s7.54	s4.54	s1.54	s10.54	......	s7.19	s7.04	......
Dump No. 6	12.27	8.07	5.07	2.07	11.07	......	7.32	7.17	......
Gamboa Cabin	12.32	8.12	5.12	2.12	11.12	......	7.37	7.23	......
Tower "R"	12.33	8.14	5.13	2.14	11.14	......	7.38	7.24	......
Gorgona	12.45	8.25	5.25	2.25	11.25	A.M. 8.05	7.50	......	A.M. 6.00
Matachin	s12.50	s8.30	s5.30	s2.30	s11.30	s8.10	s7.55	......	6.04
Matachin Jct	12.51	8.31	5.31	2.31	11.31	8.11	7.56	......	6.05
Bas Obispo	s12.55	s8.35	s5.35	s2.35	s11.35	s8.15	s8.00	......	s6.11
Las Cascadas	s1.01	s8.41	s5.41	s2.41	s11.41	s8.21	s8.06	......	s6.17
Empire	s1.07	s8.47	s5.47	s2.47	s11.47	s8.27	s8.12	......	6.21
Culebra	s1.12	s8.52	s5.52	s2.52	s11.52	s8.32	s8.17	......	6.24
Summit	1.14	8.54	5.54	2.54	11.54	8.34	8.19	......	6.25
Paraiso Jct	s1.21	s9.00	s6.00	s3.00	s12.00	s8.40	s8.25	......	6.31
Pedro Miguel	s1.23	s9.02	s6.02	s3.02	P.M. s12.02	s8.42	s8.27	A.M. s7.45	6.32
Miraflores	s1.28	s9.07	s6.07	s3.07	s12.07	s8.47	s8.32	s7.50	......
Corozal Jct	1.33	9.12	6.12	3.12	12.12	8.52	8.37	7.55	6.39
Corozal	s1.3[illegible]	s9.13	s6.13	s3.13	s12.13	s8.53	s8.38	s7.56	6.40
Diablo	......	s9.14	s6.14	s3.14	s12.14	s8.54	s8.39	s7.58	......
Balboa Jct	1.38	9.17	6.17	3.17	12.17	8.57	8.42	8.01	6.45
Panama	1.40	9.20	6.20	3.20	12.20	9.00	8.45	8.05	6.50
Arrive.	A.M.	P.M.	P.M.	P.M.	P.M.	A.M.	A.M.	A.M.	A.M.

STATIONS.	NORTHWARD.							
	First Class.							
	120	122	124	126	128	130	132	134
Arrive.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.
Colon	9.15	12.15	3.15	......	7.15	9.15	12.15	3.20
Mount Hope	s9.10	s12.10	s3.10	......	s7.10	s9.10	s12.10	s3.15
Mindi	9.04	12.04	3.04	......	7.04	9.04	12.04	3.09
New Gatun	s9.00	s12.00	s3.00	......	s7.00	s9.00	A. M. s12.00	s3.05
Gatun	s8.55	P.M. s11.55	s2.55	......	s6.55	s8.55	s11.55	s3.00
Quebrancha	8.49	11.49	2.49	......	6.49	8.49	11.49	2.53
Monte Lirio	s8.43	s11.43	s2.43	......	s6.43	s8.43	s11.43	s2.47
Bohio	8.37	11.37	2.37	......	6.37	8.37	11.37	2.41
Frijoles	s8.31	s11.31	s2.31	......	s6.31	s8.31	s11.31	*2.35
Dump No. 6	8.17	11.17	2.17	......	6.17	8.17	11.17	2.21
Gamboa Cabin	8.12	11.12	2.12	......	6.12	8.12	11.12	2.16
Tower "R"	8.11	11.11	2.11	......	6.11	8.11	11.11	2.15
Gorgona	7.59	10.59	1.59	5.30	5.59	7.59	10.59	2.03
Matachin	s7.54	s10.54	s1.54	s5.25	s5.54	s7.54	s10.54	s1.58
Matachin Jct	7.53	10.53	1.53	·5.24	5.53	7.53	10.53	1.57
Bas Obispo	s7.49	s10.49	s1.49	s5.20	s5.49	s7.49	s10.49	s1.53
Las Cascadas	s7.44	s10.44	s1.44	s5.14	s5.44	s7.44	s10.44	s1.48
Empire	s7.38	s10.38	s1.38	s5.08	s5.38	s7.38	s10.38	s1.42
Culebra	s7.32	s10.32	s1.32	s5.02	s5.32	s7.32	s10.32	s1.36
Summit	7.29	10.29	1.29	4.59	5.29	7.29	10.29	1.33
Paraiso Jct	s7.21	s10.21	s1.21	s4.51	s5.21	s7.21	s10.21	s1.25
Pedro Miguel	s7.19	s10.19	s1.19	s4.49	s5.19	s7.19	s10.19	s1.23
Miraflores	s7.13	s10.13	s1.13	s4.43	s5.13	s7.13	s10.13	s1.18
Corozal Jct	7.08	10.08	1.08	4.38	5.08	7.08	10.08	1.13
Corozal	s7.07	s10.07	s1.07	s4.37	s5.07	s7.07	s10.07	s1.12
Diablo	s7.05	s10.05	s1.05	s4.35	s5.05	s7.05	s10.05	s1.10
Balboa Jct	7.02	10.02	1.02	4.32	5.02	7.02	10.02	1.07
Panama	7.00	10.00	1.00	4.30	5.00	7.00	10.00	1.05
Leave.	A.M.	A.M.	P.M.	P.M.	P.M.	P.M.	P.M.	A.M.

PANAMA—BALBOA SERVICE.

STATIONS.	NORTHWARD.										
	First Class.										
	200	202	204	206	208	210	212	214	216	218	220
	P. M.	P.M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.
Panama	3.10	3.25	3.40	3.55	4.10	4.25	4.40	4.55	5.10	5.25	5.40
Big Tree	3.05	3.20	3.35	3.50	4 05	4.20	4.35	4.50	5.05	5.20	5.35
Balboa	3.00	3.15	3.30	3.45	4.00	4.15	4.30	4.45	5.00	5.15	5.30
	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P.M	P. M.

STATIONS.	SOUTHWARD.										
	First Class.										
	221	219	217	215	213	211	209	207	205	203	201
	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P.M.	P. M.	P. M.	P. M.	P. M.
Panama	5.30	5.15	5 00	4.45	4.30	4.15	4.00	3.45	3.30	3.15	3.00
Big Tree	5.35	5.20	5.05	4.50	4.35	4.20	4.05	3.50	3.35	3.20	3.05
Balboa	5.40	5.25	5.10	4.55	4.40	4.25	4.10	3.55	3.40	3.25	3.10
	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.	P. M.

Train No. 119 will carry members of Marines and Infantry, ONLY, from Bas Obispo and Las Cascadas.

Train No. 121 will pull out on main line at Pedro Miguel and back up to station platform to discharge and load passengers.

Trains Nos. 121, 134, and 200 to 221, inclusive, will handle first-class passengers, ONLY.

Train No. 121 will not handle any passengers for Gorgona or intermediate points south to Culebra.

PEDRO MIGUEL EXCAVATION.

History of Operations at that Point During the French and American Times.

A steamshovel is engaged in leveling the low hill separating the lock at Pedro Miguel from that part of the village situated west of the Panama railroad, the material being used in the backfill of the east lock wall. The amount to be excavated when the shovel began operations was approximately 114,000 cubic yards. The hill formerly sloped east to the old Panama railroad track, and the section that was outside of the Canal prism at elevation plus 141 feet, covered to some extent by spoil from the upper part of the hill removed in the French times, is that which is being leveled. To the west, the hill formerly sloped southward to the Rio Grande to elevation plus 32.80 feet, and on the other side, it formed a valley in conjunction with another hill above elevation plus 88 feet. When the Americans took up the excavation work at this point, the most notable feature of the French operations to be seen was an irregular-shaped hole, with sides of solid rock, which was known on the French canal plans as lock No. 9.

During the French administration, Pedro Miguel was a subsection of Paraiso, situated in a loop formed by the Rio Grande. The total length of this subsection, as laid out by the French, measured along the axis of the canal, was about 2,782 feet, and the total excavation to be made down to elevation plus 39 feet was approximately 1,307,900 cubic yards. The original contract for excavation was awarded on September 28, 1883, to a Frenchman named Carcenac, who was a cousin of the second Madame deLesseps, and during its existence about 514,615 cubic yards of material were removed. It extended from the present Station 1921 plus 55 feet to Station 1949 plus 37 feet. Mr. Albert Millet, a Frenchman, who had graduated at Troy, N. Y., joined Mr. Carcenac, but the firm was dissolved shortly afterward when the latter decided to return to France. Mr. Pierre Gey then became connected with the enterprise, and the work was continued by Millet and Gey until 1885, when M. Fillippi R. was given a 25 per cent interest in the firm. In 1887, another member was added in the person of M. Coiret, but the arrangement did not continue long, for the same year the work was merged, for financial reasons, in the general contract of Baratoux, Letellier & Company, who had assumed the contract from, but not including Culebra, to Naos Island, with the exception of the part included in the site for lock No. 9, which was turned over to Erzinger, Delphieux & Company, subcontractors for M. Eiffel, the general contractor for the locks, early in 1888. The remainder of the work in this section continued under Baratoux, Letellier & Company until the failure of the first French company.

In 1888, the Pedro Miguel contract was cancelled on account of the plan of the canal having been changed from sealevel to lock, and, by reason of this action, the contractors were awarded an indemnity. The amount paid the contractors at the start by the first French company, for every class of material, which, at Pedro Miguel, was principally rock, was $1.40 silver per cubic meter, but contracts made later carried different prices. Originally, silver was at a discount of only 16 to 24 per cent, but at the time the contract was dissolved, it had reached 150 per cent.

In beginning the excavation work at Pedro Miguel, the contractors made a pick and shovel attack on the hills on all sides, transporting the soil outside of the prism with Decauville cars, furnished by the canal company. The latter charged a ten per cent rental on all equipment supplied, for wear and tear, which not only applied to cars, locomotives, and excavators, but to rails, ties, and to houses, as well. Lumber, coal explosives, and other material purchased outright from the canal company was paid for at the company's valuation.

The excavation work at Pedro Miguel was begun by making benches at intervals of about 16 feet, in order to get into the hill with the heavier equipment. This equipment consisted of two Osgood steamshovels, and two Weir and Richmond excavators, together with a number of 4 and 6-meter dump cars, and four locomotives. All the clay, covering the rock in the hill was taken away with the lighter equipment, the larger equipment being used, in the main, in excavating on the Paraiso side of the hill. The rock was composed partly of a dike of diabase, and partly of calcareous sandstone and tuff. At elevation about 39 feet, a ledge of carboniferous shale was encountered. It is recorded that the Osgood shovels showed poor results at this point, and, although the excavators did better, the output never went much higher than 100 cars a day.

An official profile of this section, as of February 21, 1887, shows that some material had been removed between September, 1886, and the former date, but none of the elevations had been much changed. A profile of May, 1889, made to set forth the status of the work at the time of the failure of the old company, shows, with the exception of the pit at lock No. 9, the bottom of the excavation to have been about elevation plus 56 feet to elevation plus 75 feet.

Steamshovel excavation was started at the Pedro Miguel lock site in September, 1905. Prior to December 31, 1908, the Central Division forces removed 1,664,349 cubic yards of material between Station 1919 plus 30, the dividing line between the Central and Pacific Divisions, and Station 1954. During the period, November, 1910 to June 1, 1912, the Central Division forces have excavated 278,104 cubic yards of material between Station 1919 plus 30 and Station 1933, making a total of 1,942,453 cubic yards removed by the Central Division from the present limits of the Pacific Division. Work by the Central Division was carried down to elevation plus 40 feet over the greater portion of the lock site. The lock and dam section of the Pacific Division began excavating at this point in June, 1908, and up to date has removed a total of 1,291,459 cubic yards.

PERSONAL.

Among the passengers on the *Ancon*, which arrived at Cristobal on Monday, June 24, were: Col. W. C. Gorgas, accompanied by his wife and daughter; Lieut.-Col. W. L. Sibert, accompanied by his son; Lieut.-Col. Chas. F. Mason, accompanied by his son; and Maj. T. C. Dickson and family.

St. John's Day Banquet.

St. John's Day was celebrated by the Masons on the Isthmus by a banquet, which was held at the International Hotel in Panama, on Saturday night, June 22, under the auspices of the Ancon, Corozal, and Pedro Miguel Masonic clubs. About 80 Masons were present. Judge S. E. Blackburn officiated as toastmaster, and addresses were made by Justice H. A. Gudger, Rev. A. A. Nellis, Dr. Reeder, and Rev. W. H. Decker.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending June 22:

DATE.	Hours worked.	Cubic Yards.
June 10	7.10	2,484
June 11	7.45	2,808
June 12	8.05	3,803
June 13	7.45	3,088
June 14	8.00	2,822
June 15	8.05	2,720
Total	46.50	17,284
June 17	6.40	2,963
June 18	7.30	2,903
June 19	6.25	2,137
June 20	6.40	2,508
June 21	7.10	2,657
June 22	7.10	2,398
Total	41.35	15,566

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to April 30, 1912, follows:

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total.
To June 30, 1909	3,427,090.29	....	9,673,539.28	69,622,561.42	78,022,606.10	....	160,745,797.09
Fiscal year, 1910	709,351.37	....	1,803,040.95	26,300,167.05	2,863,088.83	....	31,675,648.20
Fiscal year, 1911	755,079.44	....	1,717,792.62	27,477,776.19	3,097,959.72	....	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,089,361.82	312,920.11	....	2,615,340.33
August, 1911	74,768.45	1,878.27	156,954.79	2,287,506.30	355,087.42	86,243.14	2,962,438.37
September, 1911	64,905.24	1,805.83	146,912.23	2,212,702.66	234,233.58	86,275.56	2,746,835.10
October, 1911	64,143.49	1,586.71	152,252.71	2,751,377.24	323,154.80	32,061.45	3,324,576.40
November, 1911	66,491.92	2,502.39	138,404.22	2,346,719.44	200,614.00	93,952.56	2,848,684.53
December, 1911	66,013.49	1,854.62	143,745.59	2,467,291.16	316,891.32	60,794.07	3,056,590.25
January, 1912	74,737.19	2,581.53	114,637.59	2,228,910.21	451,899.54	148,983.75	3,021,749.81
February, 1912	71,769.71	2,330.07	115,308.91	2,326,058.48	249,658.11	73,488.96	2,838,614.24
March, 1912	67,304.46	2,002.52	123,461.41	2,489,702.10	290,937.83	87,356.62	3,060,764.94
April, 1912	62,768.03	2,111.60	123,398.89	2,426,334.10	161,038.21	97,177.11	2,872,827.94
Total	5,577,318.30	21,180.89	14,547,085.02	147,026,468.17	86,880,089.57	766,333.22	254,818,475.17

OFFICIAL CIRCULARS.

Independence Day, A Holiday.

CULEBRA, C. Z., June 25, 1912.

CIRCULAR No. 453:

Independence Day, Thursday, July 4, 1912, will be observed as a holiday in the Canal Zone, and, as far as practicable, all public business will be suspended on that day.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Tables of Annual Rates of Pay for Hourly Employes

CULEBRA, C. Z., June 14, 1912.

CIRCULAR No. 451:

The following annual rates of pay for hourly employes will be used by all divisions and departments in the preparation of estimates for the fiscal year 1914:

Annual pay for 311 days for hourly employes entitled to gratuity pay for holidays.			Annual pay for 304 days for hourly employes not entitled to gratuity pay for holidays.		
Rate. Cents.	8 hours per day. Amount	9 hours per day. Amount	Rate. Cents.	8 hours per day. Amount	9 hours per day. Amount
10	$248.80	$279.90	5	$121.60	$136.80
15	373.20	419.85	7	170.24	191.52
16	398.08	447.84	10	243.20	273.60
20	497.60	559.80	11	267.52	300.96
22	547.36	615.78	13	316.16	355.68
25	622.00	699.75	15	364.80	410.40
26	646.88	727.74	16	389.12	437.76
32	796.16	895.68	20	486.40	547.20
34	845.92	951.66	22	535.04	601.92
35	870.80	979.65	25	608.00	684.00
38	945.44	1063.62	26	632.32	711.36
40	995.20	1119.60	32	778.24	875.52
44	1094.72	1231.56	34	826.88	930.24
46	1144.48	1287.54	35	851.20	957.60
48	1194.24	1343.52	38	924.16	1039.68
53	1318.64	1483.47	40	972.80	1094.40
56	1393.28	1567.44	44	1070.08	1203.84
59	1467.92	1651.41	46	1118.72	1258.56
60	1492.80	1679.40	48	1167.36	1313.28
62	1542.56	1735.38	53	1288.96	1450.08
64	1592.32	1791.36	56	1361.92	1532.16
65	1617.20	1819.35	59	1434.88	1614.24
68	1691.84	1903.32	60	1459.20	1641.60
70	1741.60	1959.30	62	1507.84	1696.32
72	1791.36	2015.28	64	1556.48	1751.04
74	1841.12	2071.26	65	1580.80	1778.40
75	1866.00	2099.25	68	1653.76	1860.48
76	1893.88	2127.24	70	1702.40	1915.20
78	1940.64	2183.22	72	1751.04	1969.92
79	1965.52	2211.21	74	1799.68	2024.64
81	2015.28	2267.19	75	1824.00	2052.00
83	2065.04	2323.17	76	1848.32	2079.36
85	2114.80	2379.15	78	1896.96	2134.08
100	2488.00	2799.00	79	1921.28	2161.44
			81	1969.92	2216.16
			83	2018.56	2270.88
			85	2067.20	2325.60
			100	2432.00	2736.00

In the comparative column showing present organization as of June 30, 1912, the same annual rates shown above for hourly men should be used.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Time Lost Due to Illness or Injury.

CULEBRA, C. Z., June 18, 1912.

CIRCULAR No. 297-c:

The instructions which are in effect for monthly employes—that time lost due to illness or injury, which is the result of the fault or misconduct of the employe, will not be credited as service entitling the employe to leave with pay—will, in the future, apply also to hourly employes.

This amends Paragraph 9 of Circular No. 297-B.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Personal Calls on Telephone Lines.

CULEBRA, C. Z., June 19, 1912.

TO ALL CONCERNED:

Attention is directed to instructions contained in Circular No. 433 that telephones installed for official use are not to be used for personal calls of employes during business hours, except in case of emergency. This applies more particularly to the hours from 7 to 12, and from 1 to 5. During these periods it is absolutely necessary that the 'phones be used only for official purposes so far as practicable.

H. F. HODGES, *Acting Chairman.*

Procedure of Employes Detailed for Service in Supervision of the Panama Elections.

CULEBRA, C. Z., June 24, 1912.

CIRCULAR No. 452:

The following procedure, in connection with I. C. C. employes detailed for service on the supervision of the elections to be held in the Republic of Panama in 1912, is furnished for the information and guidance of all concerned:

1. Each employe will be detailed to this work upon the request of the supervisory officer in charge, who will advise the Examiner of Accounts, by written notice, in duplicate, of the date on which the service is to begin.

2. Written notice, in duplicate, will also be furnished the Examiner of Accounts by supervisory officer in charge for each employe when the work is finished, giving the beginning and ending dates, inclusive, of the special duty assignment.

3. Each employe will be carried on the pay roll and paid by the I. C. C. for his full time, including time on special duty. Roll should show in remarks column in each case: "Pan. Elec. Duty, from .... to ....," both dates inclusive.

4. The cost accountant in each division or department will charge on his abstract of expenditures—Form C. E. 132-2—"Individuals and companies, Panama elections," the full value of time of employes while engaged in this work, and support the charge with detailed list of such employes, showing roll and pay references, rate of pay, inclusive dates of the detailed duty, total number of units, and extension in money.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Rules and Regulations Regarding the Examination, Treatment, and Care of Water Supplies from a Sanitary Standpoint.

CULEBRA, C. Z., May 22, 1912.

CIRCULAR No. 441:

1. These rules and regulations will cover all regular, auxiliary, and emergency water supplies for domestic use under the jurisdiction and control of the Isthmian Canal Commission and Panama Railroad Company.

2. The inspection, sampling, testing, analysis, and treatment of the water supplies shall be performed, under the direction and subject to the responsibility of the division engineer having jurisdiction, by two physiologists, one employed under the Atlantic Division and the other under the Pacific Division, whose jurisdiction for this purpose shall be territorially limited, as follows:

Physiologist, Atlantic Division—From New Frijoles northward, including Toro Point and Porto Bello.

Physiologist, Pacific Division—From Tabernilla southward, including any islands on the Pacific side.

Any division or department head may avail himself in the usual manner of the services of either of the physiologists for special analysis of the regular, or other water supplies.

3. The following rules will govern the inspection, sampling, testing, and analysis of water supplies from a sanitary standpoint:

(*a*) A complete chemical, microscopical, and bacteriological analysis of the raw, untreated waters of all reservoirs shall be made at least once each month, the results of which, together with statement of any changes noted in analysis, as compared with previous ones made, with reasons therefor if any are apparent, and any recommendations having in view the correction of any faults found, shall be promptly reported to the division engineer having jurisdiction.

(*b*) There should be attached to the report covered by section (*a*):

(1) A bacteriological and microscopical report of all filtered waters, including the results of such examinations of the bacterial content, alkalinity, and color of both raw and filtered water as are made from day to day at the filter plants, which daily examinations should be made in all cases, except where the filtration is of the nature of preliminary treatment, as for instance, at Miraflores.

(2) A bacteriological analysis of all condensed waters, both as it goes from the condensers and in the distributing cart. If the analysis shows a high bacteria content in either case an immediate report by telephone, to be confirmed as soon as possible by letter, should be made to the division engineer having jurisdiction, with proper recommendations to rectify the same.

(*c*) When any marked change in the character of a water supply occurs, as for example, the appearance of anabæna, an increase in the chlorine or B. coli content, etc., such change should be reported at once by telephone to the division engineer having jurisdiction, with recommendations for the rectification of the same, and confirmed in writing as soon as practicable thereafter.

(*d*) The methods of analysis are to be those of the American Public Health Association, excepting with regard to bacterial counts which should be made with + 1. agar incubated at room temperature.

4. The following rules will govern the care and maintenance of water supplies from a sanitary standpoint:

(*a*) An inspection shall be made at least twice a month of all reservoirs and filters, and a report thereon in writing made to the division engineer having jurisdiction, covering such matters as condition of water supply, manner of drawing water from reservoirs, treatment of waters, and method of handling the filters, which recommendations will form the basis of such instruction to the physiologist as the division engineer thinks proper. The amount and character of chemicals to be used in treating water and method of applying same will be subject to the supervision of the physiologists.

(*b*) As little water as practicable should be allowed to flow over the spillways. When the rising water in a reservoir reaches the crest of the spillway, the main blow-off valves should be opened whenever practicable and the water from the lower layers of the reservoir allowed to escape until the level of the water in the reservoir drops to a short distance below the spillway crest. The blow-off valves should be opened only upon the authority of the division engineer, upon the recommendation of the physiologist, and custodians of reservoirs will keep the physiologist informed in regard to this matter.

(*c*) Wherever practicable water drawn from any reservoir for domestic use shall be taken from as near the surface as possible.

(*d*) Hunting and picnicking one reservoir watersheds, and fishing or boating on reservoirs is absolutely forbidden. Custodians and others connected with water supplies will see that this rule is enforced. The police department will inspect all reservoir watersheds at least three times each month at regular intervals, to prevent trespassing thereon.

5. All reports herein directed to be made by the physiologists shall be forwarded, in triplicate, to the division engineer having jurisdiction, who will forward one copy thereof to the Chairman and Chief Engineer and one copy to the Chief Sanitary Officer.

6. The Department of Sanitation will examine carefully all copies of reports respecting water supply matters forwarded to it, and submit to the Chairman and Chief Engineer any comment or recommendations thereon which it considers desirable or necessary. It may also make any check analysis desired at any time.

7. The Department of Sanitation will be advised at once by the head of department concerned of the use of any other than a regular water supply for the furnishing of water for domestic purposes; and no new source of supply for domestic use shall be used, except after examination thereof by the physiologist having jurisdiction, and the submission by him to the division engineer concerned of recommendations thereon covering the fitness of water for domestic use, proper location for intake, any necessary treatment of water before consumption, etc.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Acting General Foreman, Mechanical Department, P. R. R.,

PANAMA RAILROAD COMPANY,
COLON, R. P., June 18, 1912

TO ALL CONCERNED:

During the absence, on leave, of Mr. H. H. Readle, general foreman, mechanical department, effective June 19, 1912, Mr. Joseph Bryant will act as general foreman of that department.

J. A. SMITH, *General Superintendent.*

Family Quarters.

Applications for married quarters on file on May 31, 1912, were, as follows:

DISTRICT.	List No 1.	List No. 2.
Ancon	4 (2)	60 (15)
Ancon Hospital	....	2
Balboa	....	38 (9)
Bas Obispo	....	37 (6)
Corozal	1	60 (13)
Cristobal	4 (3)	133
Culebra	....	45
Empire	....	77 (29)
Gatun	....	111 (21)
Gorgona	....	78 (31)
Las Cascadas	....	26 (1)
Pedro Miguel	....	49 (11)
Porto Bello	....	10 (8)
Toro Point	....	7 (3)
Total	9 (5)	733(147)

NOTE—The figures in parentheses show the number of applicants already occupying regular or nonhousekeeping family quarters at stations other than those at which applications are filed.

LOST—On June 12, in Cristobal, or Colon, a small alligator purse containing money, a ring, and I. C. C. brass check No. 107657. Finder will please return to Toro Point police station and receive reward.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The official scorer of the duckpin league, Mr. Geo. A. Barte, reports the following results in the contest for individual medals: Highest average, Pinney, Empire, 95 per cent and 24 pins; second high average, Herring, Cristobal, 95 per cent and 10 pins; third high average, Huttlemaier, Gatun, 95 per cent and eight pins. Greatest number of marks, Pinney, Empire, six strikes; 42 spares. Three high games, Herring, Cristobal, 323. High scores, Weston, Cristobal, 125; Huttlemaier, Gatun, 125.

COROZAL.

The bowling match between Gorgona and the local team, June 22, resulted, as follows:

Gorgona.				Corozal.			
Davis......	180	120	154	Coonly.....	181	159	210
Arnold.....	116	145	93	Metzger....		126	143
Reichte....	124	147	152	Westcott...	100		
Trieger.....	132	135	140	Sims.......	147	147	142
C. Sims....	157	156	137	Souder.....	100	168	140
				Sessum.....	161	136	142
Total....	709	703	676		689	736	777

A farewell reception was given Mr. Geer on Wedoesday evening, June 19. Short speeches appropriate to the occasion were made. As a testimonial of regard, Mr. Geer was presented with a purse of $100 by the people of Corozal. Mr. R. L. Dwelle has been appointed acting secretary.

CULEBRA.

The volleyball teams of Culebra are organizing a local league, and will play a number of games to see which department in the Chief Engineer's office will be the winner. On Thursday evening, Mr. Warner's team was defeated by Mr. Baumer's team; score 2 to 1.

The basketball players are also planning a local league. Any one desiring to join can leave name at the secretary's desk.

The following are high scores in duckpins made during the week ending June 22: Palmer, 106, 104; Hobart, 106; Crain, 102; Case, 102.

EMPIRE.

The political tenpin bowling tournament was started Friday, June 21, when the Democrats bowled the Independents, the former winning two games out of the three played. This week's schedule is, as follows: Monday, June 24, Progressives versus Socialists; Friday, June 28, Democrats versus Socialists. Two games will be bowled each week until the series have been completed.

A gymnasium class for men engaged in night work will be held on Monday and Wednesday afternoons at 2 o'clock. A squad of men from this class is training for the Fourth of July athletic meet.

GORGONA.

At the meeting of the Current Topics club held Wednesday night, June 19. Messrs. Morrison, Levering, Beetham, Beebe, Taylor, and Grossberg were chosen to represent Gorgona in the debate to be held between Cristobal and Gorgona on Wednesday night, June 26.

The Catholic Club has been granted the use of the hall on Saturday night, June 29, and will give an entertainment and dance, the proceeds of which will be used for the Gorgona Catholic Church. Tickets are $1 gold. All are invited.

A mock trial will be held Friday night, June 28, at 7.30 o'clock. Admission is free, and all are invited to attend. The following men will participate: Messrs. Emery, Morrison, Ivanhoe, Taylor, Cogan. Mr. Roger Adams will act as judge.

Mr. T. L. Powell leads in the leaders league membership contest with Mr. J. C. Deavours in second place. The "Red Sox" team leads, with the "Athletics" second, and the "Phillies" third. Nearly 100 members have been secured in the league contest which closes Saturday night, June 29, at 12 o'clock.

GATUN.

"Singbad, the Sailor," a comic opera in three acts was presented by the Gatun dramatic club at the clubhouse on Tuesday evening, June 25. Special scenery was painted for the occasion. Seats were all sold on Monday night, and many stood. The participants, and the characters they represented were, as follows: Princess Aminta, Miss Eva Harris; Queen Gulnara, ruler of the Silent Isle, Mrs. C. H. Harris; Tuleika, wife of Murad, and an attendant of the queen's, Mrs. E. V. L. Finch; Lazula, prize vocal pupil, Miss Dagney Hanson; four pupils in Singbad's music school, Miss Emma Whiston, Mrs. F. E. Parmeter, Mrs. Caldwell, Miss Josephine Baker; Murad, the captain of the guard, A. C. Arthur; Ajib, the court magician, W. B. Wheeler; Singbad, a musical mariner, C. C. Carr; Hassan, his Nubian slave, J. T. Neely; Haroun al Raschid, caliph of Bagdad, H. E. Ruckert; a herald, O. Thompson; Muncho, king of cannibals, Chas. Ourand; Cruncho, Geo. W. Huttlemaier; Ginger, S. P. Dennis, Blab, A. J. Coleman; Flub, C. E. Vierbuchen; other cannibals, Messrs. Thompson, Crowell, Plummer, Duey; lady attendants to the queen, Miss Whiston, Miss Stephenson, Miss Hanson, Mrs. Caldwell, Mrs. Parmeter, Miss Murray; soldiers, courtiers, etc., Messrs. Dennis, Crowell, Loulan, Kernish, Plummer, Duey, Carr, Wilkie, Delgado, Swan, Wood. Scenes—Act 1, seashore, Silent Isle; Act II, palace gardens; Act III, seashore, Silent Isle. Period, that of the Arabian Nights. Musical director, A. B. Dickson; stage director, C. C. Carr; business manager, F. G. Smith; designer of costumes, Mrs. C. H. Harris; piano accompanist, H. F. Bronson; scenic artists, J. H. Reichard and Max Hienstorfer; stage carpenter, E. B. Clark.

Doyle has high score in tenpins so far in June—208 pins.

Mr. Geo. Huttlemaier has been appointed bowling alley attendant.

Moving pictures will be shown on Saturday night, instead of Monday, as previously announced.

CRISTOBAL

The next moving picture show will be held on Friday evening, June 28. Messrs. Glick and Weston will furnish music between the films. Several illustrated songs will be sung in which the audience will be requested to participate.

On Wednesday evening, June 19, the literary and debating club held its election. The following officers were chosen: President, G. K. Weston; vice-president, A. B. Shippee; secretary, H. L. Walsh. The last meeting of the club will be held on June 26, after which a vacation recess will be taken until Wednesday, September 4, when it will reconvene as a congress. This club has been one of the strongest features of clubhouse activity in Cristobal, drawing to its debates many hundreds of the residents of Cristobal during the past year. The joint debate assigned to take place between Gorgona and Cristobal on Wednesday evening will be an open program to which the public is invited. Admission will be free. Refreshments will be served. The I. C. C. orchestra will furnish special music.

Mr. F. L. Bernsee, champion checker player of the Isthmus, will entertain at simultaneous checkers all players of the Cristobal clubhouse, and such others as he may choose to invite, on Thursday evening, June 27, at 8.15.

CAMP ELLIOTT.

An exhibition of checker playing was given by S. L. Bernsee of the Cristobal clubhouse, on Saturday evening, June 22, during which twelve boards were played simultaneously. Twenty-two men played 71 games, of which 65 were won by Mr. Bernsee, four were lost, and two were draws.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmain Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the two weeks ending June 22:

Cristobal, June 8, from New York, with 500 cases turpentine, 118 barrels coal tar, 115 kegs nuts, 870 kegs nails, 225 pieces pipe, for stock; 75 cases springs, Atlantic Division; 32 casks brass tubes, 116 pieces structural steel, Panama Railroad Company; 32 cases castings, 90 packages castings, superintendent of erection; 85 pieces snubbing posts, 114,359 bags cement Pacific Division.

Sixaola, June 8, from New York, with 410 coils rope, 10 cases sundries, for stock; 36 cases castings for superintendent of erection; 254 pieces lumber, for Mechanical Division.

Advance, June 10, from New York, with 9 cases bolts, 180 cases soap, 100 bags tie plugs, 300 bundles brooms, 273 barrels brick, 67 cases lanterns, 100 drums thermit, 20 kegs chalk, 1,000 pieces steel bars, 34 pieces steel plates, 20 kegs horseshoes, 117 bundles galvanized steel sheets, 420 kegs nails, 12 cases wire, 15 cases handles for stock; 100 cases dry goods, 75 cases drugs and sundries, for Sanitary Department; 7 cases dredging sleeves, for Atlantic Division; and a miscellaneous cargo, the whole consisting of 3,700 packages, weighing 265 tons.

Prinz Joachim, June 10, from New York, with 77 pieces creosoted lumber, for Panama Railroad Company

Bongor, June 11, from New York, with 103,499 bags cement, for Pacific Division.

Pennsylvania, June 11, from San Francisco, with 11 bales dredging sleeves, for Atlantic Division.

Almirante, June 12, from New York, with 18 crates handles, 400 pieces pipe, 550 kegs spikes, for stock; 74 pieces castings, for superintendent of erection; 261 pieces lumber, for Mechanical Division.

Parismina, June 13, from New Orleans, with 200 cases soap, 8 cases cotters, 2,322 pieces lumber, 40 pieces piling, 1,152 pieces pipe, 392 drums oils, 200 cases grease, for stock; 1,827 pieces lumber for Mechanical Division.

Armenia, June 14, from New York, with 25 cases turpentine, 48 pieces steel plates 6,404 pieces sewer pipe, 45 cases glass, for stock; 1,225 car wheels, for Mechanical Division, Gorgona; 492 pieces lumber, for Mechanical Division; 216 bundles castings, 701 pieces structural steel, for superintendent of erection.

Hoyle Bank, June 14, from New York, with 1,500 tons structural steel, for superintendent of erection.

Panama, June 14, from New York, with 25 bundles bar iron, 50 cases steamshovel parts, 35 cases paint, 200 barrels sulphate alumina, 840 bundles roofing iron, 18 cases horseshoes, 37 cases paper, 21 barrels pipefittings, 18 kegs washers, 30 bales oakum, 15 cases mining machinery, for stock; 150 cases springs, for Atlantic Division; 64 bundles car springs, 23 pieces lumber, for Mechanical Division; 17 bundles pipe, 1,599 crates tiled slabs, 76 kegs rivets and bolts, 23 crates valves and fittings, 9 crates half-domes, for Panama Railroad Company; 50 barrels insulaters, 26 bundles cover seats, 15 cases castings, for superintendent of erection; 19 cases dry goods, 26 cases laundry machinery, 25 cases drugs and sundries, for Sanitary Department; and a miscellaneous cargo, the whole consisting of 4,545 packages, weighing 485 tons.

Carrillo, June 15, from New York, with 400 pieces black pipe, 12 cases rubber hose, for stock; 66 pieces steel plates, 45 cases castings, 10 bundles castings, for superintendent of erection.

Thames, June 16, from New York, with 122 barrels coal tar, 200 pieces steel plates, for stock.

Haakon VII, June 17, from Gulfport, with 1,101 pieces cross-ties, for Panama Railroad Company; 231 pieces lumber, for Mechanical Division,; 83 pieces piling; for Atlantic Division; 1,926 pieces piling, for stock.

Prinz Eitel Friedrich, June 18, from New York, with 75 bundles spring steel, 7 bundles steel bars, for stock.

Sonta Morta, June 19, from New York, with 9 cases castings, for superintendent of erection; 9 cases electrical material, 16 cases oil, 173 bundles pipe, 113 pieces lumber, for Mechanical Division; 725 pieces pipe, 14 cases brass sheets, 12 cases hardware, for stock.

Abongarez, June 20, from New Orleans, with 5,289 pieces lumber, for Mechanical Division; 3,625 pieces lumber, 73 pieces piling, 49 rolls cotton duck, 109 bundles car parts, 10 cases paint, 34 pieces steamshovel castings, 100 cases lard oil, 300 cases grease, for stock; 81 cases brass bolts, for superintendent of erection.

Allianco, June 21, from New York, with 75 cases steel springs, for Atlantic Division; 125 cases electrical material, for Mechanical Division; 267 packages sheet cork, 64 pieces steel beams, for Panama Railroad Company; 100 cases drugs and sundries, for Sanitary Department; 17 cases bottles, 13 cases oils, 1,000 kegs lead, 30 cases paint, 30 cases lead washers, 300 bundles roofing paper, 200 pieces steel plates, 115 bundles tie plugs, 67 cases candles, for stock; and a miscellaneous cargo, the whole consisting of 2,735 packages, weighing 330 tons.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, June 22, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia	Alhajuela	Gamboa	Bohlo	Gatun Lake
Sun., June 16..	127.0	93.9	48.2	27.4	27.4
Mon., June 17..	126.2	92.6	45.0	27.5	27.5
Tues., June 18..	126.6	93.0	45.2	27.6	27.6
Wed., June 19..	126.2	92.8	45.0	27.6	27.6
Thurs., June 20.	126.1	92.6	44.8	27.7	27.7
Fri., June 21...	125.8	92.3	44.6	27.9	27.9
Sat., June 22...	126.6	93.0	46.3	28.3	28.3
Height of low water to the nearest foot...	125.0	91.0	44.0		

Misdirected Letters.

ANCON, C. Z., June 26, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Black, C. A.
Boswell, J. H.
Clark, E. B.
Conner, F. W.
Corwin, Dexte
Crols, Mrs. Leopold
Davis, John R.
Durning, W. J.
Fels, Capt. J. G.
Hake, Jacob A.
Hedde, P.
Hilty, Chas.
Hinds, E. Garfiled (2)
Hollar, Wm. J.
Klager, Matt C.
Lovell, Mrs. Earnest
Meisner, H. Frank
Mitchell, Reggie
Moran, W. M.
Morehead, Harrie H.
Morton, Brett A.
Phillips, Joseph L.
Pike, Wm.
Pitts, J. J.
Ridley, Hubert I.
Rielley, H. I.
Roberts, L. A.
Rose, Mrs. W. H.
Ross, C. C.
Shay, Charles D.
Suarez, Luis Valle
Thompson, William L.
Tonhey, John
Thornbury, Miss Ellen
Watson, George W. (2)

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning June 26, 1912.

FRESH MEATS.

	Price.
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Plate, per pound	9
Corned, No. 1, per pound	12
Corned, No. 2, per pound	10
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds,) per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	25
Venison (Imported), Stew, per pound	6
Forequarter (not under 6½ pounds), per pound	9
Rack (not under 5½ pounds), per pound	20
Saddle (not under 7½ lbs.), per pound	20
Leg (not under 9 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24

MISCELLANEOUS.

Caviar, Russian in ½-lb. jars, jar	89
Livers—Beef, per pound	11
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	†13
Devonshire Farm, per pound	19
Sweetbreads—Beef, per pound	25
Eggs, fresh, dozen	26
one-half dozen only	14
Bluefish, per pound	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	14
Fluke, fresh, per pound	10
Shads, fresh, each	50
Roes, shad, pair	25

POULTRY AND GAME.

Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 5½ pounds each	1.10
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each ††60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	†1.35
Hens, milk fed, for roasting, about 3 pounds each	50
Broilers, milk fed, each	70
Broilers, corn fed, each	60
Turkeys, per pound	23
Squabs, each	35
Capons, each	2.10
Ducks, teal, per pair	50
Ducks, Blackhead, pair	60
Partridges, pair	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30

CURED AND PICKLED MEATS.

	Price.
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Sugar cured, Half, for boiling, per pound.	21
Boiled, per pound	28
Hocks, per pound	?8
Bacon—Breakfast, whole piece, per pound	23
sliced, per pound	24
Pork, salt, family, per pound	13
Ox tongues, each	1.00
Pigs'feet, per pound	9
Tongues, per pound	18

DAIRY PRODUCTS.

Butter—Creamery, special, per pound	38
Sheffield Farms, extra, fancy per lb.	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	22
Swiss, per pound	28
Edam, each	1.00
Parmesan, lb.	35
Edam, in tins, per tin	26
Neufchatel, cake	6
Gouda, per pound	34
Snappy, cake;	10
Milk (Certified), per bottle	**20
Butter, bottle	**15
Fer-mil-lac, bottle	**20
Ice cream, quart	?25
½-gallon	?50

VEGETABLES AND FRUITS.

Corn, green, per ear	3
Beets, per pound	3
Celery, per head	0
Cabbage, per pound	5
Cucumbers, per pound	10
Carrots, per pound	5
Cauliflower, per pound	†15
Egg plant, per pound	10
Lettuce, per pound	15
Onions, per pound	4
Potatoes, white, per pound	3½
sweet, per pound	†3
Parsnips, per pound	6
Rhubarb, per pound	4
Squash, per pound	5
Turnips, per pound	4
Tomatoes, per pound	11
Yucca, per pound	3
Yams, per pound	3
Apples, per pound	10
Canteloupes, each	8
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, California navel, per dozen	30
Oranges, Jamaica, per dozen	12
Pinepples, each	*10
Watermelons, each	*40

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

††Fowls weigh each about as follows: 3, 3½, 4, 4½ and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight, is supplied and refund note sent for difference.

?Sold only from commissaries; no orders taken for delivery.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 3, 1912, (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
June 27	......	2.10	8.09	2.18	8.35
June 28	......	2.58	8.59	3.05	9.21
June 29	......	3.43	9.46	3.48	10.05
June 30	......	4.22	10.28	4.27	10.45
July 1	......	4.58	11.06	5.05	11.24
July 2	......	5.35	11.40	5.40	......
			P.M.		
July 3	12.01	6.08	12.22	6.16	......

Rainfall from June 1 to 22, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	2.05	15	4.39
Balboa	2.16	15	4.69
*Miraflores	2.10	16	5.87
Pedro Miguel	2.70	18	7.79
Rio Grande	1.58	15	5.07
Central Section—			
Culebra	1.68	15	5.97
*Camacho	1.27	15	6.47
Empire	1.63	15	7.10
Gamboa	2.83	15	9.21
*Juan Mina	2.39	15	9.93
Alhajuela	1.87	15	9.38
*El Vigia	2.27	15	12.33
*Gorgona	2.71	22	12.38
*Frijoles	3.78	15	10.46
*Monte Lirio	1.75	15	9.00
Atlantic Section—			
Gatun	1.86	15	9.20
*Brazos Brook	1.92	8	11.72
Colon	2.52	3	8.80
Porto Bello	2.76	3	†9.90

*Standard rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., June 21.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steamship Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Advance	P. R. R.	Thursday	June	27
Panama	P. R. R.	Wednesday	July	3
Allianca	P. R. R.	Tuesday	July	9
Colon	P. R. R.	Monday	July	15
Advance	P. R. R.	Monday	July	22
Panama	P. R. R.	Saturday	July	27
Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21
Allianca	P.R.R.	Tuesday	Aug.	27
Colon	P. R. R.	Tuesday	Sept.	3
Advance	P. R. R.	Monday	Sept.	9
Panama	P. R. R.	Saturday	Sept.	14
Allianca	P. R. R.	Friday	Sept.	20
Colon	P. R. R.	Friday	Sept.	27

CRISTOBAL TO NEW YORK.

Allianca	P. R. R.	Thursday	June	27
Colon	P. R. R.	Wednesday	July	3
Advance	P. R. R.	Tuesday	July	9
Panama	P. R R.	Monday	July	15
Allianca	P. R. R.	Sunday	July	21
Colon	P. R. R.	Sunday	July	28
Advance	P. R. R.	Saturday	Aug.	3
Panama	P. R. R.	Friday	Aug.	9
Allianca	P. R. R.	Thursday	Aug.	15
Colon	P. R. R.	Wednesday	Aug.	21
Advance	P.R.R.	Tuesday	Aug.	27
Panama	P. R. R.	Tuesday	Sept.	3
Allianca	P. R. R.	Sunday	Sept.	8
Colon	P. R. R.	Sunday	Sept.	15
Advance	P. R. R.	Saturday	Sept.	21
Panama	P. R. R.	Friday	Sept.	27
Allianca	P. R. R.	Thursday	Oct.	3
Colon	P. R. R.	Wednesday	Oct.	9

NEW YORK TO COLON.

Metapan	U. F. C.	Wednesday	June	19
Prinz Sigismund	H.-A.	Saturday	June	22
Trent	R. M.	Saturday	June	22
Tivives	U. F. C.	Saturday	June	22
Zacapa	U. F. C.	Wednesday	June	26
Prinz Joachim	H.-A.	Saturday	June	29
Sixaola	U. F. C.	Saturday	June	29
Almirante	U. F. C.	Wednesday	July	3
Prinz Eitel Friedrich	H.-A.	Saturday	July	6
Santa Marta	U. F. C.	Wednesday	July	10
Prinz August Wilhelm	H.-A.	Saturday	July	13
Metapan	U. F. C.	Wednesday	July	17
Prinz Sigismund	H.-A.	Saturday	July	20

COLON TO NEW YORK.

Carrillo	U. F. C.	Tuesday	June	25
Santa Marta	U. F. C.	Thursday	June	27
Prinz August Wilhelm	H.-A.	Monday	July	1
Turrialba	U. F. C.	Tuesday	July	2
Metapan	U. F. C.	Thursday	July	4
Carrillo	U. F. C.	Saturday	July	6
Prinz Sigismund	H.-A.	Monday	July	8
Tivives	U. F. C.	Tuesday	July	9
Zacapa	U. F. C.	Thursday	July	11
Turrialba	U. F. C.	Saturday	July	13
Prinz Joachim	H.-A.	Tuesday	July	16
Almirante	U. F. C.	Thursday	July	18
Prinz Eitel Friedrich	H.-A.	Monday	July	22

NEW ORLEANS TO COLON.

Atenas	U. F. C.	Saturday	June	22
Orleanian	U. F. C.	Wednesday	June	26
Parismina	U. F. C.	Saturday	June	29
Cartago	U. F. C.	Wednesday	July	3
Abangarez	U. F. C.	Saturday	July	6

COLON TO NEW ORLEANS.

Atenas	U. F. C.	Thursday	July	4
Orleanian	U. F. C.	Thursday	July	4
Parismina	U. F. C.	Thursday	July	11
Cartago	U. F. C.	Thursday	July	11
Abangarez	U. F. C.	Saturday	July	18

Panama railroad steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending June 22:

Arrivals—June 17, Tug *Reliance*, from Cristobal; June 17, *Huallaga*, from Callao; June 18, *Chile*, from Guayaquil; June 19, *Limari*, from Valparaiso.

Departures—June 17, *Quilpue*, to Valparaiso; June 19, *Ecuador*, to Guayaquil; June 19, *Peru*, (Pacific Mail), to San Francisco; June 21, *Pennsylvania*, to San Francisco; June 22, *Pleiades*, to San Francisco.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JULY 3, 1912. No. 45.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Relocation of East Diversion Channel.

A new break in the slide in the east bank of the Canal, opposite the Whitehouse railroad yard, has set in motion earth and rock which will require, it is estimated, the operation of a steamshovel for 12 months, or equivalent services, for clearing the channel. The break extends to within 100 feet of the East Diversion, the center of which is 600 feet from the center line of the Canal, and in anticipation of a break in the diversion, which would flood Culebra Cut, a loop diversion channel is being constructed about 150 feet further east. This is to extend from opposite Station 1625 to opposite Station 1638, and will be about 1,300 feet in length.

The surface of the earth through which the new channel is to be cut is lower than the level of the track which extends along the dike on the Canal side of the present diversion. This requires that the trestle at each end of the loop, over which equipment will be carried across the present diversion to the site of excavation, be built on a grade. In consequence, each trestle will be approximately 274 feet long, though the width of the diversion is 30 feet. As the excavation proceeds, the spoil will be used for filling each trestle from the lower end, and when the new channel is completed the filling of the trestle across the present one will form dams to protect from inundation the part of the present diversion which is threatened by the slide. The deepest cut in the loop will extend about 15 feet below the surface of the ground. Approximately 15,000 cubic yards will be excavated, and the filling will require about that quantity of spoil.

Transfer from Empire to Gorgona Shops.

In accordance with the provisions of Circular No. 349–A, dated May 27, 1912, the operations at Empire shops have been almost wholly transferred to Gorgona shops since July 1. About 76 gold and 203 silver employes are to be retained at Empire shops for light repairs, while about 37 gold and 53 silver men, formerly there, have been given work at Gorgona. Between 25 and 30 of the transferred Americans will continue to occupy their "married quarters" in Empire, and for their benefit the Central Division labor train through Culebra Cut at lunch period will run to Gorgona, instead of only to Matachin, on its way from the Cut to Culebra, and return. The schedule of morning and evening Culebra-Gorgona labor trains will not be changed.

Change in High School Organization Approved.

The proposed change in the present high school organization, outlined in THE CANAL RECORD of June 5, whereby the first and second-year pupils at Colon, Cristobal, and Gatun will attend school at Gatun; the first and second-year pupils at Gorgona, Culebra and intermediate points to be provided for at Empire; the first and second-year pupils south of Culebra, and all third and fourth-year pupils in the Canal Zone to attend the consolidated school at Ancon, has been approved by the Acting Chairman and Chief Engineer. It has been estimated that this plan will result in cutting down the item of transportation fully two-thirds. During the past three school years the mileage consumed in transporting the scholars to and from school by Commission brakes and on the railroad, has aggregated about 1,500,000 miles. In this connection, the remarkable fact exists that during the entire period, not an accident has been reported as having occurred to any of the children while in transit.

Fall of Hail on Naos Island.

During the rain and wind squall along the Pacific coast, Saturday afternoon, June 15, the wind reached a maximum velocity of 50 miles an hour from the south at Sosa, and 33 miles from the south at Ancon. During this squall, hail was reported on Naos Island. This is the third time during the past six years that hail has been reported in the Canal Zone. Hail fell at Alhajuela on the afternoon of May 28, 1910, also at Cucaracha some two years earlier. No hail has yet been observed at any of the regular meteorological stations in the Canal Zone, The phenomenon is unusual in a tropical country.

New Trestle Across Culebra Cut.

In order that the Canal channel may be completed at the point where it is crossed by the Panama railroad, north of Pedro Miguel station, a new bridge is to be erected about 850 feet south of the present bridge, known as No. 57½, and the latter will be removed. This involves the construction of 2,000 feet of new track. Connecting with the present line at the Paraiso block tower, it will follow a letter "S" curve, crossing the Canal on a 700-foot trestle and joining the main line at the block tower just west of the channel. The middle of the new trestle will be about 1,950 feet north of the outer end of the upper approach wall of Pedro Miguel Lock. The channel at the site of the new bridge is being completed to full depth and width, so that the trestle may remain until the completion of the Canal. Its removal will be simple, as it is to be built on pile bents and with timber stringers.

Features of Lock Gate Construction.

In connection with the mitering lock gates, a somewhat novel device has lately been adopted in order to insure a tight fit between the bottom of the gates and the fixed sills on the masonry. The original plans provided for a heavy timber to be fixed to the masonry and a smaller timber fastened along the bottom of the gate leaf. In normal operation, when the gate is closed these two sills should be in contact. Owing to changes in temperatures and consequent slight variations in the lengths of the gate leaves, it is possible that an absolute fit of one timber against the other will not at all times be maintained. This may also arise from slight changes in the operation of the machinery.

Without making any change in the timbers as originally specified, a sill consisting of a rubber flap four inches wide and one-half inch thick, and fastened to the gate by an angle iron has been added. This seal will at all times fit closely, even though there be a slight gap between the fixed sill and the leaf. Experiments made at the Gorgona shops seem to indicate that the design will fulfill its purpose perfectly.

In order to protect the bottom girder of the leaf from corrosion on the inside of the leaf, and furthermore, to drain the bottom gate leaf of any accumulated water, a filling of concrete and coke is being placed on the bottom of each gate leaf. The seepage water is collected in four pumps, from which it will be pumped out by a pumping system to be installed in all the gates. Coke is used as being lighter than a solid concrete filling. The method used consists of first coating the steel work with a wash of cement, then packing in the coke, broken into small pieces, to a height of five inches, and pouring concrete cement grout over it, so as to fill the spaces between the pieces of coke. An impervious coating of cement about one inch thick will then be laid over the coke, pitched to proper surface. Material for this purpose is furnished by the Commission, but will be placed by the McClintic–Marshall Company as a part of their regular contract.

Single Piledriver on Double Trestle.

Piledriver No. 101 was returned to the Naos Island breakwater on July 1, after being repaired in Gorgona shops. During that period but one piledriver was engaged on the trestle, as no other swing-hammer driver could be spared to take the place of No. 101, and operations were carried on with considerable difficulty and delay. When the piledriver in use had driven a

NOTES OF PROGRESS.

(Continued.)

bent of four piles for one track, it would back, under its own motive power, to the end of the double track, cross over and advance to the outer end of the other track. When it had driven a bent there the operations of backing, crossing, and advancing would be repeated. In consequence, the rate of advance was about one-fifth of that when a piledriver is engaged on each track. The outer end of the trestle is about 1,360 feet from the crossover, and the speed of the piledriver, under its own power, is not more than five miles an hour.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 89 per cent completed, 202,228 cubic yards, out of a total of 225,000, having been placed at the close of work on June 29. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
June 23	....	...	......
June 24	104	6.30	1
June 25	52	3.00	1
June 26	52	3.30	1
June 27	40	2.00	1
June 28	108	3.30	1
June 29	124	6.30	1
Total	480	25.00	1
Previously reported	201,748		
Grand total	202,228		

Special Trains on Election Days.

The Panama railroad operated a special train of six coaches from Frijoles to Colon, and return, and one of 14 coaches from Gorgona to Panama, and return, on June 30, to carry the citizens of the Republic of Panama, resident in the Canal Zone, to the respective cities to vote in the municipal election. In addition, special coaches were attached to three regular trains running into Panama. The special trains were chartered by one of the political parties, and the additional coaches by the other.

Statement of Track Shifter Operations.

A statement of tracks raised and thrown by machines during the month of June, is, as follows:

SHIFTER No.	Location.	No. of feet moved.
7	Miraflores	74,344
2	Balboa	139,600
7	Balboa	56,276
2	Naos Island Trestle.	9,000
2	Balboa "Y" Fill	23,500
7	Balboa "Y" Fill	20,188
2	Ancon-Sosa Fill	24,200
7	Ancon-Sosa Fill	15,100
8	Cotton Tree	7,600
7	Culebra Swamp	5,300
5	Culebra Swamp	24,158
5	Relocation No. 1	9,926
5	Relocation No. 4	36,115
5	Relocation No. 5	33,422
5	Relocation No. 6	26,898
5	Relocation No. 7	28,357
		*533,984

* Equivalent to 101.15 miles.

Honors for Canal Zone Research.

The committee in charge of scientific exhibits at the sixty-third annual session of the American Medical Association, awarded a certificate of honor for the exhibit on tropical pathology prepared in the Sanitary Department of the Isthmian Canal Commission. The exhibit consisted of a series of slides made by Dr. W. M. James, showing malarial parasites. A paper on amœbic dysentery, by Dr. W. E. Deeks, was read before the clinical division.

Postal Business and Canal Zone Revenues.

The total amount of money orders issued in the Canal Zone during the month of May was $395,885.59, of which $319,392.40 was issued payable in the United States, $75,159.59 in the Canal Zone, $1,099.60 in Martinique, and $234 in Costa Rica. The number of orders issued was 19,282, and the average value was $20.53. Money order fees amounted to $1,879.40, and the amount paid and repaid was $116,984.32. Postal sales amounted to $6,436.50, and newspaper postage to $13.92.

Revenue collections during the month of April were, as follows: Bicycle and chauffeur licenses, $23; insurance collections, $50; motor vehicle licenses, $276; steamboat inspection, $311.95; taxes, licenses, etc., $9,526.44, making a total of $10,187.39.

CONCRETE WORK IN THE LOCKS

Over 88 per cent of the concrete for the locks is in place, the amount at the close of work on June 29 being 3,788,579½ cubic yards, out of a total of approximately 4,302,563. A total of 19,884 cubic yards of concrete was laid in the locks during the week ending June 29.

GATUN LOCKS.

Over 93 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on June 29 being 1,880,531½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day for the week ending June 29, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	
June 23	84	1.26	2	....	....	......	....	84
June 24	350	5.56	2	....	....	......	....	350
June 25	248	4.10	2	....	....	......	....	248
June 26	280	4.54	2	....	....	......	....	280
June 27	314	5.16	2	....	....	......	....	314
June 28	150	2.46	2	....	....	......	....	150
June 29	220	3.50	2	....	....	......	....	220
Total	1,646	28.18	2	....	....	......	....	1,646
Previously reported	....	....	......	....	....	......	....	1,878,885½
Grand total	....	....	......	....	....	......	....	1,880,531½

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 96 per cent completed. 858,151 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on June 29. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	
June 24	194	5.00	1	275	30.50	5	.. ..	469
June 25	228	6.00	1	290	25.50	5	....	508
June 26	178	4.50	1	275	32.50	5	....	453
June 27	120	3.00	1	251	27.50	5	....	371
June 28	182	5.50	1	240	20.50	4	....	422
June 29	32	2.00	1	266	26.00	4	....	298
Total	934	26.00	1	1,587	162.50	4.67	......	2,521
Previously reported	....	....	......	....	....	......	4,468	855,630
Grand total	....	....	....	....	....	....	4,468	858,151

MIRAFLORES LOCKS.

Over 74 per cent of the concrete for the system of two twin locks at Miraflores was in place on June 29, the total amount on that date being 1,049,897 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
June 24	854	20.75	7	1,591	23.58	3	350	39.00	6	....	2,798
June 25	854	25.17	7	1,408	19.08	3	291	32.50	5	....	2,553
June 26	998	31.42	7	1,478	21.58	3	259	27.50	5	....	2,735
June 27	678	22.58	7	1,424	20.83	3	191	21.50	4	....	2,293
June 28	630	22.50	7	1,522	22.08	3	225	22.00	4	....	2,377
June 29	630	17.91	7	1,776	25.92	3	555	18.00	6	....	2,961
Total	4,644	140.33	7	9,202	133.07	3	1,871	190.50	5	....	15,717
Previously reported.	....	....	......	....	....	......	....	....	......	3,693	1,034,180
Grand total.	....	....	......	....	....	......	....	....	......	3,693	1,049,897

PERMANENT SITES.

Those for Administration, Balboa Terminal, and Lock Operating Forces Fixed Upon.

The committee, consisting of Col. H. F. Hodges, Mr. H. H. Rousseau, Col. W. C. Gorgas, Mr. S. B. Williamson, and Lieut.-Col. C. A. Devol. appointed to consider a site for the permanent administration building for the Canal works, and a permanent site for the gold employes at the Pacific terminus of the Canal, has made its report, and under date of May 24, it was approved in its general terms by the Chairman and Chief Engineer, who stated, however, that he did not desire to have the lots platted, or the streets laid out, until the ground had been gone over by a competent architect.

The committee, in making its selection, visited a number of proposed sites, but decided that the one best answering the requirements was on the knoll, west of Ancon quarry, and directly east of the main track leading to the quarry. The committee believed a rectangular type of building would be best adapted to this site. It also recommended that quarters be provided for gold employes only; that the general area adjacent thereto, and northeast of the proposed site of the permanent administration building, be reserved for the quarters for the permanent administration force; that this area should be laid off into lots, using the present road for a basis, the lots to be 100 feet wide and 150 feet deep, or such other size as may be found best suited to the adopted type of building. The committee further recommended that the area on the slope of Sosa Hill, and on the fill next to the Ancon–Balboa road, be set apart as a site for quarters for the shopmen, and other gold terminal employes, it having been estimated that this area will be large enough, not only for the living quarters, but for the necessary auxiliary buildings, such as police station, post-office, fire station, clubhouse, hotel, and other miscellaneous buildings common to the present Canal Zone settlements. The committee ascertained that, with the exception of the Ancon–Balboa road, no shifting of highways will be required; that no road construction will be needed, except in the form of streets, and no railroad tracks will be interfered with.

PERMANENT SETTLEMENT FOR THE OPERATING FORCES OF THE PACIFIC LOCKS.

The committee appointed to consider the permanent site for the operating forces of the Miraflores and Pedro Miguel locks, made a report on June 5, which was approved by the Acting Chairman and Chief Engineer on June 11. The committee gave consideration to six different locations, including that of the general area occupied by the settlement at Corozal. It was the unanimous opinion of the committee that the operating forces of the Pacific locks should be housed in one settlement. Two proposed sites at Miraflores were dropped from consideration on account of their being unsuited for building purposes, and inconvenient for the Pedro Miguel lock force, without being especially convenient for the Miraflores lock force. Two locations along the margin of the proposed Miraflores lake, while suitable as building sites, were abandoned for the reason that water transportation would be necessary to reach them, either from Pedro Miguel or Miraflores locks. The main handicap against Corozal was that of distance. The first site considered, namely, that opposite to, and east of the Pedro Miguel lock, was finally decided upon as offering more advantages than the others. It is not only suitable from a building standpoint, but, in addition, is adjacent to the lock which guards the south end of the summit level, while the distance between it and the Miraflores lock is short.

Assuming that the operating forces for the Pedro Miguel and Miraflores locks may consist of as many as 62 gold employes, and 162 silver employes, there are at the present time American buildings, in good condition, in the area comprehended in the adopted site to house 22 gold families, 48 gold bachelors, and 300 silver laborers. To these may be added a number of other quarters at Pedro Miguel, situated on ground which will be submerged by Miraflores Lake, which can be removed to the permanent settlement, if necessary.

PERMANENT SETTLEMENT AT GATUN LOCKS.

In connection with the permanent site for the operating force at Gatun Locks, the committee was of one mind that the site now occupied by the Commission quarters should be utilized; that the present quarters will be ample for the permanent force, but that eventually permanent buildings should be erected to take the place of the present temporary structures.

Free Health Lectures.

The Canal Zone committee of public health education, of the American Medical Association, which was organized in March, has conducted a series of lectures in the Commission clubhouses at Cristobal, Gatun, Gorgona, Empire, and Culebra. Arrangements have been made for a continuance of the series after July 15, as follows. At Pedro Miguel, under the song and praise association, at Las Cascadas, under the Union Sunday school, and at Ancon, under the Women's Altar Guild of St. Luke's Hospital Chapel. The dates of these lectures will be announced later.

Under the auspices of the Knights of Pythias. a lecture on the menace of the housefly was given at Paraiso on Tuesday evening, June 25, by Dr. A. J. Orenstein, chairman of the Public Health Education committee. The committee has ordered two moving picture slides, one on "Good housekeeping," and the other on the "Fly," which will be available for use after July 15.

Band Concert.

A band concert will be given by the Isthmian Canal Commission Band at Gatun, C. Z. on Sunday, July 7, at 5 p. m. The program follows:

1. March—*Niebelungen*..................Wagner
2. Selection—*The Fortune Hunter.* (By request)..........Herbert
3. (*a*)—*Pigeon Wing Rag*................Johnson
   (b)—*Wild Cherries Rag*................Snyder
4. Overture—*Hungarian Lustspiel*......Keler Bela
5. Intermezzo—*After Sunset*...............Pryor
6. Waltz—*Wedding of the Winds*..............Hall
7. Flower Song—*Hearts and Flowers*........Tobani
8. Medley Selection—*Remick's Hits*........Lampe
9. March—*Lance and Shield*..........Laurendeau

CHAS. E. JENNINGS, *Musical Director.*

The next concert will be given at Toro Point, July 14, at 2.30 p. m.

LABOR FORCE AND QUARTERS IN MAY.

On May 29, there were 35,063 employes actually at work on the Canal and the Panama railroad, and of that number, 28,272 were Canal employes. The gold force on the Canal work, composed almost entirely of white Americans, was 4,129. The force report for May 29, 1912, was, as follows:

Department.	SILVER EMPLOYES.*													Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Const'ct'n and Eng'r'ng	4,271	9	14	231	771	2,753	3,802	458	123	495	4,056	2,632	†259	19,874	3,080	22,954
Civil Administration...	189	..	..	2	4	23	......	......	...	.....	......	10	....	228	353	581
Sanitation........	671	..	..	1	4	1	......	......	1	2	4	322	‡6	1,012	347	1,359
Quartermaster's.........	900	..	...	100	107	111	59	6	31	1	117	847	§21	2,300	185	2,485
Subsistence..............	714	..	..	2	.....	2	......	......	...	.....	......	......	....	718	51	769
Disbursements..........	7	..	..	....	.....	......	......	......	...	.....	......	......	....	7	24	31
Examinat'n of Accounts	4	..	..	....	.....	......	......	......	...	.....	......	......	....	4	89	93
Total................	6,756	9	14	336	886	2,890	3,861	464	155	498	4,177	3,811	28	24,143	4,129	28,272
Month previous	6,842	12	15	336	926	3,052	4,024	506	150	526	4,798	3,628	263	25,078	4,276	29,354

Panama railroad force, 5,054; Panama railroad relocation force, 382; Panama railroad commissary force, 1 325 Total 6,791. I. C. C. force 28 272 Grand total, 35 063

*All wages specified are in gold †Includes 2 at 5 cents. ‡Includes 6 at 5 cents. §Includes 10 at 5 cents.

The force report for the Department of Construction and Engineering on May 29, follows:

Division.	SILVER EMPLOYES.*													Total Silver.	Total Gold.	Grand Total.
	Artisans.						European Laborers.		West Indian Laborers.							
	Monthly.	44 cents	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents	7 cents.			
Chief Engineer	173	..	..	31	82	321	109	48	...	12	454	204	8	1,442	309	1,751
Mechanical..............	183	3	2	18	63	365	52	6	...	.....	665	21	10	1,388	685	2,073
Atlantic............	1,613	5	10	81	275	610	1 028	175	...	90	633	189	32	4,741	664	5,405
Central..................	1,062	1	..	33	118	462	1,654	17	97	393	742	1,952	145	6,676	7 9	7,395
Pacific..................	1,240	..	2	68	233	595	959	212	26	....	1,562	266	64†	5,627	703	6,330
Total	4,271	9	14	231	771	2,753	3,802	458	123	495	4,056	2,632	259†	19,874	3,080	22,954
Month previous.........	4,312	12	14	226	759	2,879	3,947	498	120	525	4,758	2,569	242†	20,861	3,186	24,047

*All wages specified are in gold †Includes 2 at 5 cents.

QUARTERS.

On May 31, there were 24,498 occupants of Commission quarters. Of these, 9,129 were white Americans, of whom 5,239 were men, 1,988 were women, and 1,902 were children. There were 5,874 Europeans of the laborer class, of whom 5,230 were men; 248 were women, and 396 were children. There were 9,129 West Indian negroes, of whom 7,127 were men; 1,027 were women, and 1,341 were children.

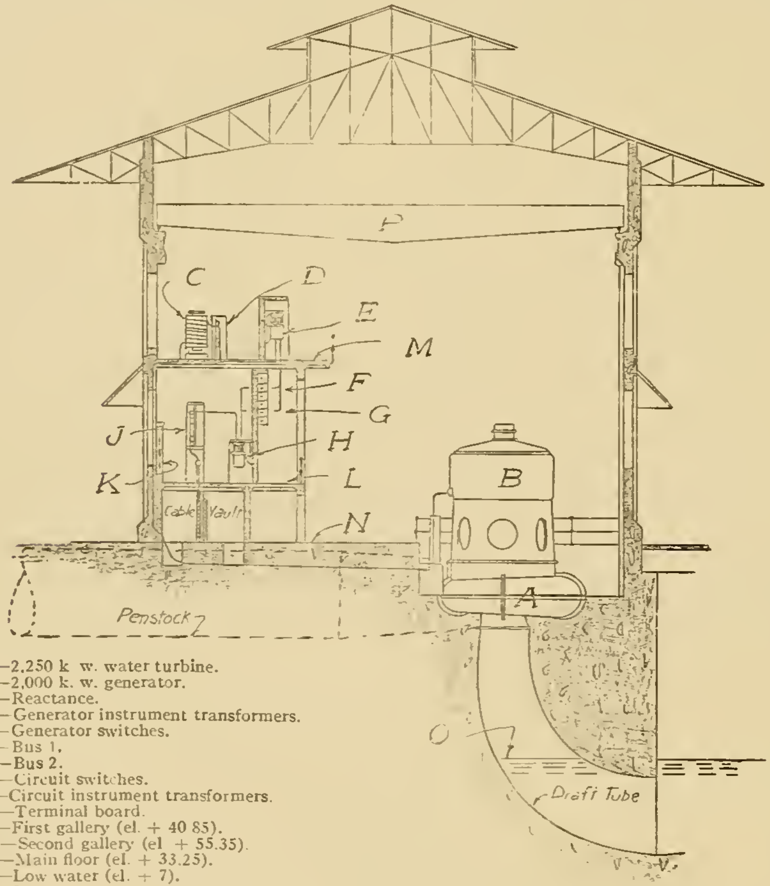
HYDROELECTRIC STATION AT GATUN SPILLWAY.

Surplus Water of Gatun Lake to Supply Electrical Energy for Canal Zone.

Specifications and requisition for auxiliary electrical equipment for the Gatun hydroelectric station have recently been forwarded to the Washington Office for purchase in the United States. This equipment is in addition to the plant purchased some time ago, the first contracts embracing the hydraulic equipment, with the electric generators and exciters. The principal items of the present requisition are the switchboards, oil-switch group, station battery, light and power transformers, and an air compressor, all necessary for the equipping of three complete generating units. A brief description of the waterpower project of the Panama Canal, follows:

From the storage in Gatun Lake, there will be available sufficient water to warrant the installation of 6,000 kilowatts in generating capacity, including reserve. The average head throughout the year will be approximately 75 feet, the elevation of the tail race being about eight feet above sealevel. During the rainy season, water will be plentiful and must be wasted over the adjacent Spillway. During the dry season, however, it will be necessary to draw upon the storage in Gatun Lake above elevation plus 79. The maximum quantity of water diverted for hydroelectric development is approximately seven per cent of the minimum water supply and is the excess which is not required for lockages, evaporation, and leakages. Water will be extremely abundant for several years, until such a time as the traffic through the Canal approaches full capacity.

The electrical load, which will be connected to the hydroelectric station, consists for the most part of power feeders, which will distribute energy to the machinery of the three locks, to the permanent machine shops, to the dry dock, to the coal handling plant, to the batteries, and to other smaller electric drive which is now giving service. In addition, there will be the lighting load of the locks and of the Zone towns. In all probability, considerable load will be obtained through a service for domestic purposes, electric cooking utensils replacing the stove, in order to create a saving in the cost of fuel, which is an expensive item upon the Isthmus. There is a slight possibility of an electrification of the Panama railroad over the relocated lines. the electrification depending entirely upon the nature of the traffic conditions that result after completion of the Canal. The circuits from the station to the load centers, in general, will be in duplicate, insuring as far as possible an absolutely continuous service. The station will be connected by means of a high voltage transmission line to the present steam generating station at Miraflores, which station will be held in reserve to tide over either shut-down or low-water periods of the Gatun station.



A—2,250 k w. water turbine.
B—2,000 k. w. generator.
C—Reactance.
D—Generator instrument transformers.
E—Generator switches.
F—Bus 1.
G—Bus 2.
H—Circuit switches.
J—Circuit instrument transformers.
K—Terminal board.
L—First gallery (el. + 40 85).
M—Second gallery (el + 55.35).
N—Main floor (el. + 33.25).
O—Low water (el. + 7).
P—30-ton crane.

FIG. 1—SECTION THROUGH PROPOSED HYDROELECTRIC STATION AT GATUN.

The hydroelectric station is to be situated adjacent to the north wall of Gatun Spillway. The building will be constructed of concrete and steel, and will be of a design suitable for a permanent power house in a tropical country. The dimensions of the building are such as to permit the present installation of the three 2,000-kilowatt units, and provision is made for a future extension of three additional similar units. The building will be rectangular in shape, and will contain one main operating floor, with a turbine pit and two galleries for electrical equipment. The station equipment will include a 30-ton crane to be used during erection and whenever repairs are to be made. The building, with the machinery and electrical equipment, is laid out upon the unit principle. Each unit consists of an individual headgate, penstock, governor, generator, exciter, oil-switch, and control panel. The position of the main features of the development relative to the Spillway channel are shown in Figure 2.

Water is to be taken from Gatun Lake, the elevation of which will vary with the seasons from 79 to 87 feet above sealevel, through a forebay which is constructed as an integral part of the curved portion of the north Spillway approach wall. The curved portion of the Spillway wall contains five large apertures into the forebay and will serve as a fender wall to prevent floating débris from accumulating at the headgates.

From the forebay, the water will be carried to the turbines through three steel plate penstocks, each having an average length of 350 feet. The penstocks are to be constructed of ⅜-inch plates riveted together, and are to be 10 feet 6 inches in diameter inside. The exterior of the penstock is to be surrounded by a thick concrete coating to serve both as a protection against corrosion, and as a means of strengthening the penstock against superimposed earth pressures. The concrete will have a minimum thickness of 12 inches and will be anchored to the steel by means of Z-bars, which are riveted to the plates. The position of the station building relative to the headgates requires that each penstock makes a right angle bend to enter the station. The alignment of penstocks is such that the steel and masonry will be entirely covered by the fill of Gatun Dam. Near the lower end of the penstocks, at the building wall, there will be installed a testing link, the purpose of which is to measure, by the velocity method, the quantity of water flowing in the tube.

The entrances to the penstocks will be closed by cast iron headgates, and bar iron trash racks, the latter being provided for the purpose of preventing sunken débris from entering the penstocks and either clogging or breaking the turbine runner. The headgates will be raised and lowered by individual motors, which will be geared to rising stems attached to the gate casting. Control of each motor from the station switchboard will be effected by means of reversing contactors with interlocks, a limit switch, and a float switch, all operating automatically. The driving machinery and the motors will be housed in a small concrete gate house, erected upon the forebay wall directly over the gate recesses and trash racks. The gate house will be constructed for the present requirements of three headgates, and provision is made for a future addition of three more units.

The turbogenerator units are to be of the vertical type, the entire weight of the rotating element being suspended from an overhung thrust bearing, which is supported from the top shield of the generator. The water turbine proper will be of the spiral casting, one runner, Francis type, and is to be set in heavy masonry foundation. The water will enter the turbine through a tapering joint from the penstock and discharge into an increasing, elbow draft tube, made of ½-inch steel plates and will be imbedded in the concrete foundation. A section of the station, showing the arrangement of penstock, turbine, and draft tube, is illustrated in Figure 1. The turbine is rated at 2,250 kilowatts at a speed of 250 r. p. m. and will consume approximately 500 second feet of water at full load.

Superimposed upon the turbine casting is to be the generator, a distance ring, six feet in height, separating the two. The generator is to be rated at 2,000 kilowatts, and will deliver 3-phase 25-cycle current at 2,200 volts potential. The turbine, generator, and auxiliary equipment are to be of the best mechanical and electrical construction obtainable. The governor is to be mounted upon one side of the distance ring and is to be geared solidly to the main shaft.

The path of the electrical energy from the generator to the outgoing feeders is shown diagramatically by the heavy line in Figure 1. The leads emerge from the lower part of the generator and pass through a manhole at the base of the turbine into a duct line, which carries the cables to manholes in the cable vault; thence the leads are taken up the building wall in tile ducts to the generator reactances. The reactances are to give protection to the generators in event of severe and protracted short-circuit outside the machines and consist of air insulated coils mounted upon concrete cores; a reactance coil is inserted in each of the three phases of each generator.

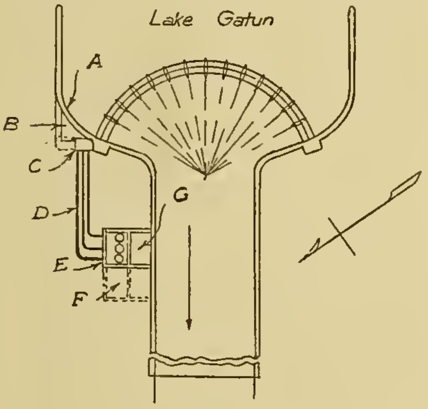


FIG 2—LOCATION PLAN.

A—Fender wall.
B—Forebay.
C—Gate house.
D—Penstocks.
E—Power house.
F—Possible extension.
G—Tail race.

Adjacent to the reactances is a concrete cabinet which contains small series and shunt transformers for energizing the instruments and protective devices on the main control switchboard. The generator leads next enter a concrete compartment which houses a pair of oil switches. The two switches permit a selection of connections to either of the duplicate buses, which are situated on the first gallery floor, directly underneath the generator oil switches. The buses are to distribute the energy among the several circuits, each of which is equipped with oil switches. The distributing circuit passes from the circuit switch to an instrument transformer compartment, which is quite similar to the generator instrument transformer compartment. From the instrument transformers, the circuit cables drop into the vertical duct shelves in the cable vault below; thence make an exit from the station through manholes at either end of the building into duct lines at the crest and toe of Gatun Dam. As far as practicable, the entire electrical equipment is in duplicate, and is designed with continuity of service, operating accessibility, and protection of human life as the prime considerations.

One feature of a well designed, modern power house is the remote control of all auxiliary machinery and equipment, particularly of the dangerous switching operations on high voltages. The control and the protecting devices of the Gatun station have been worked out carefully and will permit of an extremely flexible and reliable operation of the generators upon any probable condition of loading. A main control switchboard of the unit panel type is to be erected upon the second gallery floor, where the operator possesses a good view of the entire station. Command of all operations is obtained through master control switches, and indication thereof is procured by means of small pilot (signal) lamps. The operator at the switchboard remotely controls all switching operations, both on the high tension and the exciter buses, and, in addition, controls the headgates, the governors, the rheostats, and the field circuit breakers.

Besides the control switches, the main switchboard contains all indicating, integrating, and recording instruments, which are essential for an intelligent and economical operation of the station. Time limit relays are mounted upon the rear panels to serve as a protection to circuits and generators in case of overload. Continuity of the operating circuit for the control of switches will be obtained by the installation of a storage battery upon the first gallery floor, the switches being mounted upon one panel of the main control switchboard. A voltage regulator, which will automatically maintain a uniform bus pressure, will be assembled upon a smaller station panel at one end of the main board.

The Canal Commission will try one slight variation from standard practice in an attempt to secure the greatest reliability in the excitation system without the necessity of installing additional water turbine exciter sets. In any alternating current station, it is absolutely necessary that the fields of the alternators be supplied continuously with direct current, usually at 100 to 125 volts potential. When the station is running smoothly, this direct current supply is obtained most economically through motor-driven exciter sets, which are operated directly from the 2,200 volt buses. Two such units, each of 100 kilowatts capacity, will be erected in the Gatun station. Difficulty is encountered, however, when the station is inoperative, as no source of 2,200-volt energy is available to drive the exciter sets. It is customary practice in hydroelectric stations to install independent exciters, which are driven by small water turbines. The small water turbines are more complicated than motor-driven sets, requiring adjustment of governor and of valves, and also additional penstocks and gates, with the resulting complication of operation. At Gatun, each main unit will be equipped with a 50-kilowatt exciter mounted upon the vertical shaft in the 6-foot space which separates the turbine and the generator. When starting, after complete shut-down, the direct-connected, 50-kilowatt exciters will furnish the necessary excitation until such a time as the moter-driven exciter may be connected to the system. This selection of exciter equipment results in a very simple and easily operated, system which possesses ample capacity under all conditions of operation and exceptional reserve in event one exciter is accidentally damaged.

Lodge Recruiting Contest.

The result of the three months' contest in recruiting members for Isthmian Canal Rebekah Lodge No. 1, at Gorgona, was announced at the meeting on Friday evening, June 14. The contestants were the first and second officers of the organization. aided by a committee of members selected by each one. The total result was 14 new members, the honors to go to the second officer for securing nine names. The contestants' dinner took place at the lodge hall on Friday evening, June 28, when there were present the contestants and their committees; and the newly initiated members of the order.

PERSONAL.

Col. Geo. W. Goethals, accompanied by Mrs. Geo. R. Goethals, returned to the Isthmus on the United Fruit Company's steamer *Tivives* on Sunday, June 30, from a month's absence in the United States.

Red Cross Finances.

The financial statement of the Canal Zone chapter, American National Red Cross, for the month of May, 1912 is, as follows:

RECEIPTS.

May 1, On hand	$2,477.08	
31, Membership dues received during the month	3.00	
Total receipts		$2,480 08

DISBURSEMENTS.

May 4. Relief of American family at Empire	$10.00	
May 23, Postage for secretary	2.00	
May 25, Relief of American from Chiriqui province, stranded in Colon	25.00	
May 31, Relief of Jamaican in Colon Hospital who was deported	8.00	
Total disbursements		$45.00
May 31, Balance on hand		$2,435.08

JOHN L. PHILLIPS, *Treasurer.*

Approved:

C. A. DEVOL, *Chairman.*

Canal Zone Postal Savings Bank Transactions.

A statement of Canal Zone postal savings bank transactions at Canal Zone post-offices for the period of May 4 to June 1, follows:

NAME OF OFFICE.	Postal Savings Certificates Issued.	Postal Saving Certificates Paid.
Ancon	$8,017.00	$5,178.00
Balboa	6,575.00	4,870.00
Bas Obispo	885.00	120.00
Corozal	9,013.00	6,244.00
Cristobal	12,297.00	6,148.00
Culebra	14,446.00	12,414.00
Empire	13,758.00	2,495.00
Gatun	9,981.00	6,087.00
Gorgona	17,879.00	16,531.00
Las Cascadas	9,248.00	11,278.00
Matachin	881.00	436.00
Miraflores	4,549.00	2,030.00
Paraiso	4,354.00	2,870.00
Pedro Miguel	14,023.00	7,724.00
Cristobal, Station "A"	1,282.00	460.00
Cristobal, Station "B"	781.00	231.00
Total	$127,969.00	$85,116.00

Change in Date of Band Concerts at Hotel Tivoli.

Owing to the request of the management of the Panama Railroad Company, the concert of the Isthmian Canal Commission Band, which has usually been given at the Hotel Tivoli, Ancon, on the second Sunday of each month, will henceforth be given on the fourth Sunday.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

The twenty-third week of the Ancon Study Club was closed with a program on Wagner, on Friday afternoon, June 28. The papers read consisted of a short biography of the composer followed by a synopsis of his operas, including *Der Rin des Niebelungen*, and *Parswal*. A discussion of the American production of the last-named work followed. The study of the operas currently produced will conclude with the meeting on July 12. The subject for the next course will be announced later.

Church Work.

The Woman's Altar Guild of St. Ferdinand's Church, Empire, will hold a card party in the parish house on Saturday evening, July 20. Refreshments will be served and a short musical program will be given.

A meeting of the delegates from the various chapters of the Brotherhood of Saint Andrew, an order connected with the Episcopal Church, was held at St. James' Church, Empire, on Sunday, June 23, the Rev. W. H. Decker presiding. The object of the meeting was to elect a delegate to represent the local churches at the annual international convention of the Brotherhood of St Andrew, to be held in Chicago, September 4 to 8. It was decided that efforts should be made to raise money to defray the expenses of a layman to the convention, one of the brotherhood men if possible. In case this is not found to be practicable, the brotherhood will be represented by one of the clergy who may be be on vacation leave in the United States at the time of the convention. The call for this meeting was issued at the instance of the chapter of St. Stephen's church, Gatun. The brotherhood work in the Canal Zone is confined to the West Indian section of the Panama mission. There are several chapters in connection with the local churches, as follows: St. Paul's, Panama; St Mark's, Culebra; St. James', Empire; St. Philip's, Las Cascadas; St. Andrew's, Gorgona; St. Stephen's, Gatun, and Christ Church By-the-Sea, Colon. The total membership is about 75.

The Gorgona Union Sunday school will celebrate Childrens' day on July 14. A program is being prepared in which the children of the school will participate.

Camp Fire Girls of America.

Thirteen Gorgona girls responded to a call issued by Mrs. Geo. Auer and Mrs. A. L. Hackenberg for a meeting to consider the organizing of a Canal Zone group of the Camp Fire Girls of America. The meeting was held on Friday evening, June 14. The object of the organization is to raise the ideal of girlhood and womanhood, to systematize and teach certain phases of domestic science, to inculcate principles of hygienic living, and to encourage a love of outdoor life. Its principles involve also the training of its members in matters pertaining to their relations to social life, and teaching the advantages of attaining high efficiency in mental and physical development. The organization was formed in the United States about one year ago. The Canal Zone chapter will affiliate with the central organization, thus affording to its members the privileges of obtaining the literature issued by the committee, and placing the group in touch with the work. A feature of the Gorgona group will be athletic training in the gymnasium of the Commission clubhouse under the physical director. Mrs. Hackenberg and Mrs. Auer are the heads of the Camp Fire movement.

Christian League Election.

At the monthly meeting of the Christian League of Gatun held on Thursday, June 27, the following officers were elected: President, B. F. Sisson; vice-president, A. H. Brown; secretary, C. O. Jones; treasurer, I. H. Andrews; chaplain, Rev. C. O. Purdy. The officers are to serve six months from July 1, with the exception of the chaplain, who serves for a period of one year.

I. O. O. F. Installations.

Mr. B. F. Sisson, district deputy grand sire of the Independent Order of Odd Fellows of the Canal Zone, has appointed the following deputies to install the newly elected lodge officers: Mr. Olof W. Johnson, past grand, to install the officers of Cristobal Lodge, No. 2, at Cristobal, on Monday, July 8; and the officers of Gatun Lodge, No. 5, at Gatun, on Friday, July 12. Mr. J. P. Mead, past grand, to install the officers of Canal Zone Lodge, No. 3, at Empire, on Saturday, July 6. Mr. Chas. H. Beetham, past grand, to install the officers of Isthmian Canal Lodge, No. 1, at Gorgona, on Tuesday, July, 9. Mr. E. E. Price, past grand, to install the officers of Pacific Lodge, No. 4, at Ancon, on Thursday, July 11. Mrs. Miriam Beetham, past noble grand, to install the officers of Isthmian Canal Rebekah Lodge, No. 1, at Gorgona, on Friday, July 12.

Examinations for the Philippine Service.

Examinations have been announced by the Civil Service Commission, which may be held at Culebra on September 1 and 2, for assistant (male), teacher (male and female), and industrial teacher (male) in the Philippine Service. A limited supply of the announcement of this examination—No. 459— has been received and persons interested should request a copy thereof. As the number received is small the announcement should be returned to this office without any delay, in order to insure its receipt by all persons desiring it. Applications will not be received in this office for the above examinations after August 8, this date may be changed if necessary.

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., July 1, 1912.

Missing Men.

Any one having information regarding the whereabouts of the following men, who are supposed to be on the Isthmus, are requested to communicate with THE CANAL RECORD: James Gill, Thomas Schoomaker, Thomas McQuillan.

PACIFIC DIVISION TIME TABLE No. 7.

EFFECTIVE JUNE 22, 1912, AT 5 P. M.

PEDRO MIGUEL—ANCON AND MIRAFLORES—COROZAL—ANCON LABOR TRAINS.

NORTHBOUND.					STATION.	SOUTHBOUND.				
10	8	6	4	2		1	3	5	7	9
P. M.	P. M.	P. M.	A. M.	A. M.	Leave. Arrive.	A. M.	A. M.	P. M.	P. M.	P. M.
5.40	......	......	6.05	5.45	Ancon	......	......	5.18	5.34	6.48
5.42	......	......	6.07	5.47	Balboa Jct	......	......	5.16	5.32	6.45
5.45	Lve.	Lve.	6.10	5.50	Diablo	Arr.	Arr.	5.13	5.29	6.42
5.48	12.20	12.10	6.14	5.54	Corozal	11.11	11.21	5.11	5.27	6.40
5.49	12.21	12.11	6.15	5.55	Corozal Hotel	11.10	11.20	5.10	5.26	6.39
5.50	12.22	12.12	6.16	5.56	Corozal Jct., P. R. R	11.09	11.19	5.09	5.25	6.38
5.54	......	12.17	......	6.00	Power House	......	11.14	......	5.20	......
6.15	......	12.19	......	6.02	Miraflores	......	11.12	......	5.18	6.33
6.18	......	12.22	......	6.05	No. 9, Pedro Miguel	......	11.09	......	5.15	6.30
6.19	......	12.24	......	6.07	Pedro Miguel Yard Office	......	11.08	......	5.11	......
6.20	......	12.26	......	6.09	Mtl. Yard, Pedro Miguel	......	11.07	......	5.10	6.28
6.23	......	12.29	......	6.12	Hill Tower	......	11.04	......	5.07	6.25
......	12.23	......	6.18	......	Corozal Jct., Pacific	11.08	......	5.08	......	......
......	12.24	......	6.19	......	Field Office	11.07	......	5.07	......	......
......	12.26	......	6.21	......	E. & F. Cranes	11.05	......	5.05	......	......
P. M.	P. M.	P. M.	A. M.	A. M.	Arrive. Leave.	A. M.	A. M.	P. M.	P. M.	P. M.
10	8	6	4	2	STATION.	1	3	5	7	9

PEDRO MIGUEL—BALBOA LABOR TRAIN.

SOUTHBOUND.				STATION.	NORTHBOUND			
D	C	B	A		E	F	G	H
P. M.	P. M.	A. M.	A. M.	Leave. Arrive.	A. M.	A. M.	P. M.	P. M.
......	......	......	6.12	No. 9. Pedro Miguel	......	......	......	5.07
4.30	12.20	10.35	6.15	Miraflores	......	11.09	......	5.04
4.32	12.22	10.37	6.17	Cement Shed	......	11.07	......	5.02
4.34	12.24	10.39	6.19	Cocoli	......	11.05	......	5.00
4.36	12.26	10.41	6.21	Pumping Station	......	11.03	......	4.58
......	......	......	......	Corozal Jct.	6.48	......	12.58	......
4.40	12.30	10.45	6.25	Dike Siding	6.44	10.59	12.54	4.54
4.44	12.34	10.49	6.29	Balboa	6.40	10 55	12.50	4.50
P. M.	P. M.	A. M.	A. M.	Arrive. Leave.	A. M.	A. M.	P. M.	P. M.
D	C	B	A	STATION.	E	F	G	H

RELIEF TRAIN.

NORTHBOUND.	A. M.	P. M.	SOUTHBOUND.	A. M.	P. M
Leave Balboa	9.50	1.50	Leave No. 9, P. Miguel	10.30	2.30
Leave Ancon	10.00	2.00	Leave Miraflores	10.32	2.35
Leave Diablo	10.05	2.05	Leave Miraflores Yard	10.33	2.36
Leave Corozal	10.08	2.08	Leave Cocoli Yard	10.35	2.38
Leave Corozal Jct	10.10	2.10	Leave Incline Tower	10.40	2.43
Leave Incline Tower	10.11	2.11	Leave Corozal Jct	10.41	2.44
Leave Cocoli Yard	10.16	2.16	Laeve Corozal	10.43	2.46
Leave Miraflores Yard	10.18	2.18	Leave Diablo	10.46	2.49
Leave Miraflores	10.19	2.19	Leave Ancon	10.51	2.54
Arrive No. 9, P. Miguel	10.21	2 21	Arrive Balboa	11.01	3.04

NOTE: The PEDRO MIGUEL-BALBOA train will run over west side from Dike siding, picking up all men on that route, and make connections with the PEDRO MIGUEL-ANCON train at Relocation (Miraflores). The PEDRO MIGUEL-ANCON train will run over the Central Division tracks, between Corozal and Miraflores in both directions. Relief train will run over new main line between Miraflores and Corozal Junction.

W. J. HOLMES, *Trainmaster.*

OFFICIAL CIRCULARS.

Employes Required to Remain Away from Panama and Colon During Elections.

CULEBRA, C. Z., June 27, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

Please require all employes to remain away from Panama and Colon during the progress of the municipal elections on Sunday, June 30, and of the National elections on Sunday, July 14.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Panama Citizens Excused from Duty to Vote.

CULEBRA, C. Z., June 26, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

Any citizen of the Republic of Panama in your employ who might otherwise be called upon to work on Sunday, June 30, or Sunday, July 14, may be excused from duty on those days for a sufficient length of time to enable him to cast his vote in the forthcoming elections.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Traveling Expenses.

CULEBRA, C. Z., May 14, 1912.

CIRCULAR No. 48. (Superseding CIRCULAR No. 20):

1. The following regulations concerning traveling expenses of officers and employes of the Commission are published for the information and guidance of all concerned. They do not refer to travel upon the Isthmus of Panama by officers and employes stationed upon the Isthmus, unless such travel is at the beginning, or at the termination of a journey extending beyond the Isthmus.

2. Before any expense is incurred in traveling upon business of the Commission, an order will be issued by competent authority. Travel orders may be either oral or written and shall state, when written, as specifically as circumstances will permit, the travel to be performed. When an officer or employe is at a distance from the official authorized to order travel and the necessity for immediate travel will not permit of the delay necessary to procure authority, or when other conditions render it impracticable to obtain authority without serious injury to the public interests, he may proceed without such order, reporting at once in writing to the head of his department the necessity for the travel without orders. When practicable all transportation and Pullman accommodations will be procured on regular official Isthmian Canal Commission transportation requests.

3. All travel must be by the shortest practicable routes, unless otherwise directed by the travel order, and must be without unnecessary delays. Proper and legitimate travel expenses include such as are usual and essential to the comfort of travelers, such as an employe would incur if paying his own expenses, and may embrace any of the following items:

(*a*) The usual one way, or where time limits are found to be ample, round trip fares on railroads, steamships, or other public conveyances and hire of special transportation where there are no regular means of conveyance. The use of commutation tickets or the acceptance of rebates in any form on fares is prohibited. Mileage books may be used when authorized by the Chairman. Charges for meals will not be allowed if the transportation charge includes meals. "Excess baggage" charges must be explained, and, to be allowed, must be for official papers or public property carried with the officer or employe. Travel on limited trains requiring excess fares will not be allowed, except when absolutely necessary, and the account shall contain a certificate setting forth this necessity.

(*b*) Street car, omnibus, or transfer coach fare between stations, docks, and hotels, and, when there are no such conveyances available, moderate or necessary hack or cab hire, not exceeding the usual and legal rates, and transfer of baggage. Street car fare, while on official business during the time spent in a city, will be allowed, but the necessity for employing a more expensive means of conveyance must be explained in the account for consideration of the Commission.

(*c*) Sleeping car fares for one double berth, parlor car seat, and fare for usual stateroom accommodations on vessels; also, fees to porters on sleeping and parlor cars, not exceeding 25 cents in one day, and reasonable fees to porters for handling baggage at stations, etc., when necessary. Where money is expended for parlor car seat, or berth, statement should be made as to which accommodation was secured. When Pullman accommodations are procured, report should state whether upper berth, lower berth, or parlor car seat was furnished, and Pullman receipt must be filed with expense report.

(*d*) Charges for meals and lodging not exceeding $5 for any 24 hours, whether meals are taken en route, or at hotels and restaurants, and reasonable fees to waiters, not exceeding 40 cents a day. Hotel bills should be so itemized as to show the number of days and the rate per day., When travel is by ocean steamer, reasonable fees to stewards, in the aggregate not exceeding an average of 75 cents for each 24 hours, or fraction thereof, will be allowed.

(*e*) Receipted bills for hotel expenses, showing the dates of entertainment, must be furnished; also, receipts for any expense exceeding $1, except that receipts are not required for transportation by railroad or vessel, for single meals, or for fees to porters, waiters, and stewards. The cost of each meal should be stated.

(*f*) All telegrams sent to the Commission should be marked "Collect of the Isthmian Canal Commission at Government rates," as none should be prepaid. If the telegram is not to the Isthmian Canal Commission, but nevertheless on official business, the toll should be prepaid at the rates fixed in the schedule of the Postmaster General. Whenever a telegram is paid for and charged in voucher, a pen or carbon copy of same must be attached to the voucher and the receiving agent of the telegraph company shall indorse receipt of the toll on such copy. Where an official telegram is received "Collect" by an officer or duly authorized employe of this Commission, receipt for payment should be indorsed on such telegram by the agent of the telegraph company, receipted telegram to be used as subvoucher in expense account. Expenses for telegrams relating to leaves of absence, payment of salary and expense vouchers, or any other matter of a personal nature, will not be allowed, and such telegrams must not be sent to the Commission "Collect." In preparing telegrams care should be observed that all unnecessary words, initials, and figures are omitted.

Employes should provide themselves with means of identification to satisfy the telegraph companies that they are officially connected with the Commission to enable them to get messages accepted for transmittal on the terms herein fixed. Official identification cards will be issued to employes whose duties require frequent transmission of telegrams.

4. When reimbursement for traveling expenses is to be made on the Isthmus, accounts will be rendered in duplicate on forms of vouchers approved by the Commission. Such vouchers shall be certified to by the officer or employe who performs the travel, and, with the original order for travel, if written, and all necessary explanatory statements in writing, shall be submitted to the Examiner of Accounts on the Isthmus.

When reimbursement for traveling expenses is to be made in Washington, reports of the official travel performed and the expenses in connection therewith will be submitted to the official directing the travel, who will endorse thereon his verification and such other notations as may be necessary, and forward same to the proper administrative officer at Washington for permanent record in the files of the Commission.

The voucher or report will be so stated as to show clearly and in proper sequence the movements of the traveler and detailed itemization of the expense incurred day by day. Hotel expenses, when extended over several days, should be stated in the voucher or report as of the date on which paid.

5. No officer or employe traveling under orders shall pay for transportation on a railroad, steamer, or other conveyance operated by the Panama Railroad Company, but shall use an order for transportation furnished by the Chairman of the Commission, or by his direction, at Washington, or by the duly authorized official on the Isthmus. An order for transportation shall also be issued, when practicable, for travel by any steamship line between ports on the Isthmus and ports in the United States, or other countries.

6. These regulations shall not apply in any instance where by law or by action of the Commission a per diem allowance for any items of expense is fixed for any officer or employe, but shall be superseded as to the expenses which may be stated to be included in the per diem allowance.

7. The limitations of these regulations as to maximum expenses allowed for any 24 hours for meals and lodging shall not apply to officers whose salaries are in excess of $5,000 per annum. Officers whose salaries range from $3,000 to $5,000, inclusive, annually may be allowed charges for meals and lodging not exceeding $7 per day, when their detail on special duty may warrant, and such fact shall be plainly stated in the travel order.

These regulations shall be effective from and after June 1, 1912. GEO. W. GOETHALS, *Chairman.*

TELEPHONE DIRECTORY CHANGES.

A new telephone directory has recently been issued by the Panama Railroad Company, corrected to May 15, Since then a number of additions, removals, and changes in numbers, have been made, a list of which is given below. Telephone subscribers are requested to make a note of these changes in their copy of the directory.

ADDITIONS.

EXCHANGE.	Number.	Name.	Location.	Department.	Office, or residence
Colon	48	Dock 4, Checker	Colon	Q. M.	Office
Colon	113	Engineers' Quarters	Cristobal	P. R. R.	Residence
Colon	117–R	Borrow Pit	Mount Hope	P. R. R.	Office
Colon	122	Time Inspector	Cristobal	Ex. Accts.	Office
Colon	136	A. D. McEroy	Colon	P. R. R.	Office
Colon	150–B	McClintic-Marshall Construction Company	Cristobal		Office
Colon	150–R	Bill Clerk	Folks River	P. R. R.	Office
Colon	205–B	District Timekeeper	Dry Dock	At. Div.	Office
Colon	212	Sanitary Inspector	Cristobal	San.	Office
Colon	223	Wholesale Hardware	Cristobal	Comsy.	Office
Mount Hope	29	Cristobal Shop Stores	Cristobal	Q. M.	Office
Toro Point	18	Time Office	Toro Point	Fort.	Office
Toro Point	20	Quarry	Toro Point	Fort.	Office
Gatun	99–B–1	R. S. Houston	Agua Clara	At. Div.	Residence
Gatun	21	Railroad Station	Gatun	P. R. R.	Office
Empire	740–1	Block Office	Bridge 52	P. R. R.	Office
Empire	741–2	Block Office	Matachin Cabin	P. R. R.	Office
Empire	741–1–1–1	Block Office	Gorgona	P. R. R.	Office
Gorgona	110–1	Police Station	Gamboa	C. A.	Office

REMOVALS.

Gatun	97	Lock No. 2	Gatun	At. Div.	Office
Gatun	728–5	Mindi Cut	Mindi	At. Div.	Office
Gatun	728–2–1	Pumping Station	Mindi	At. Div.	Office
Gatun	726–4	Railroad Station	Frijoles	P. R. R.	Office
Colon	49	Ed. Slayback	Cristobal	P. R. R.	Office
Empire	734–4	J. W. Francis	East Balboa	Cent. Div.	Office
Empire	175	J. M. McNeil	Empire	Cent. Div	Office
Empire	73–3	Morrison's Shack	Gold Hill	Cent. Div.	Office
Empire	119–B	Shops	Bas Obispo	Cent. Div.	Office
Empire	750–4	Underwood's Car	Gold Hill	P. R. R.	Office
Empire	755–3	Yard Office	Whitehouse	Cent. Div.	Office
Gorgona	32–2	Yard Office	San Pablo	Cent. Div.	Office
Empire	741–3	Yard Office	Tabernilla	Cent. Div.	Office
Empire	161–B–2	D. J. McCauley	Gold Hill	Cent. Div.	Office
Empire	756–1–1	Tower "P"		Cent. Div.	Office

CHANGE IN NUMBER.

EXCHANGE.	Name.	Location.	Old Number.	New Number.	Remarks.
Gatun	Dredge No. 82	Gatun	119	98–2	
Gatun	C. R. Hughes	Gatun	88–A	87–B	
Gatun	District Hydrographer	Gatun	81	81–A	
Gatun	Relay Pump No. 4	Gatun	85–2	85–3	
Gatun	Relay Pump No. 5	Gatun	85–3	85–2	
Panama	J. F. Fowler	Ancon	36	34	
Corozal	Post-office	Miraflores	3–B	3–B–2	
Panama	Electrical Repair Shop	Ancon	162–B	152	
Corozal	J. A. Walker	Pedro Miguel	14–A	34–A–1	
Corozal	Police Station	Miraflores	1–B–1	1–B–3	
Empire	D. E. Wright	Empire	136–B	133	Residence
Colon	C. B. Austin	Cristobal	167–B	167–R	Office
Colon	A. R. McDaniel	Cristobal	133	133–B	
Colon	C. C. Snedeker	Cristobal	251–R	249–B	Residence
Colon	W. J. White	Cristobal	20–R	20–B	Office
Empire	Block Office	Las Cascadas	740–1	740–5	
Empire	Olaf Ekedahl	Culebra	724–3	116–B	Residence
Empire	Olaf Ekedahl	Rio Grande	116–B	724–3	Office
Empire	L. K. Needham	Empire	194	194	Office
Empire	Campbell's Car	Gold Hill	73–2	750–2	
Empire	G. A. Wicks	Empire	15	8	Office

NOTE—After 5 p. m., daily, and on Sundays and holidays, Mount Hope store, dry dock store, Dock 14, Mount Hope fire station, and Mount Hope cabin are reached through the Colon exchange; Cristobal shop stores through the Gatun exchange.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

A double joint debate was held on Wednesday evening, June 26, one at Cristobal clubhouse, and the other at Gorgona. The subject discussed was "Resolved, that the nations of the world should disarm in the interests of peace, the Gorgona team taking the affirmative, and Cristobal the negative. The teams at Cristobal consisted of Rev. Carl H. Elliott and C. J. Dinnin for Cristobal, and Messrs. Berner and Beetham for Gorgona; at Gorgona, Messrs, Matthews and Kromer for Cristobal, and Messrs. Morrison and Taylor for Gorgona. The judges gave a decision in favor of the affirmative in both places.

The next moving picture entertainment at Gorgona will be given on Friday night, July 5; at Cristobal, on Saturday evening, July 6.

COROZAL.

The Corozal bowling team will bowl the Gorgona team on the latter's alleys Saturday evening, July 5.

CULEBRA.

A simultaneous checker match was held on Saturday evening, June 29, when Mr. F. L. Bernsee played 18 men from Gorgona, Gatun, and Culebra, winning 34 games, losing two, and having two ties to his credit. A checker club has been organized, and those desiring to join are requested to hand their names to the secretary.

The high scores during the week in bowling were, as follows: Palmer, 108; Mengel, 103, 103, 107; Grier, 106.

The handball courts are ready. Members can play after 5 p. m., or after supper.

Volleyball is being played on Tuesdays and Fridays from 5.10 to 6.30 p. m.

EMPIRE.

Another team has been added to the local bowling tournament, making five teams in all.

On Monday, June 24, the Progressives bowled the Socialists, and the latter won two out of three games. On Friday, June 28, the Independents bowled the Progressives, the former winning three games. Hereafter, the tournament games will be bowled on Monday, Wednesday, and Friday nights.

GORGONA.

On Friday night a mock trial was held, Mr. Dan Kenny bringing the charge of vagrancy and slander against E. L. Emery. Attorneys for the plaintiff were Messrs. Ivanhoe and Keenen, and for the defendant, Messrs. Morrison and Deforce. R. H. Adams acted as judge. The result of the trial was a disagreement for the jury, seven to five in favor of acquittal. A new trial will be asked for.

GATUN.

During the absence of the permanent physical director, Mr. P. W. Brunner will conduct the gymnasium classes.

Louis DePoorter has returned from his annual leave and will again take up his duties as manager of the pool room.

Mr. C. Oettli won the pennant for the three highest games in tenpins during the month of June.

The Gatun dramatic club will give "Singbad the Sailor" in several of the clubhouses during the month of July.

Members may join the Spanish classes at any time by the payment of $2.50 in advance. Classes for ladies are held Tuesday and Thursday afternoons. Mens' classes are held Wednesday and Friday nights.

The 100 scores, or over, in duckpins for the month of June are, as follows: Huttlemaier, 119, 113, 109, 103; Wurster, 119; Teall, 111; Harper, 107; Kiernan, 103,101; Mack, 103.

CRISTOBAL.

On Saturday evening, June 29, a special team from Gorgona entered into a bowling contest with the Cristobal team on the local alleys. Cristobal took two out of three games by the following scores: Cristobal—738, 779, 821; Gorgona—750, 660, 709.

The students of the Gatun high school will present a musical operetta on Tuesday, July 9. Admission, members, free. Nonmembers, 50 cents.

On Thursday evening, June 27, Mr. F. L. Bernsee, champion checker player of the Isthmus, entertained 19 players at simultaneous checkers. Sixty-three games were played, with the following results: Mr. Bernsee won 59, lost two to Dr. Dunn of Culebra, and one to F. E. Herrington of Cristobal, and drew one with Mr. Henner. Refreshments were served during the play.

A fifteen-ball, all-bank, pool tournament will be started in July. Entrance fee is $1.50, to be paid to the secretary, or Mr. Beck, in charge of the pool room. All entrance fees must be paid before July 8.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission arrived at the ports of Cristobal and Colon, during the week ending June 29:

Turrialba, June 23, from New York, with 9 cases electrical material, for Mechanical Division; 50 crates galvanized buckets, 237 pieces pipe, 87 bundles pipe, for stock.

Prinz August Wilhelm, June 24, from New York, with 50 bundles washers, 7 cases transfer cases, 5 bundles steel, for stock; 632 pieces steel bolts, for Atlantic Division.

Ancon, June 25, from New York, with 120,680 bags cement, 75 cases coil springs, 67 pieces snubbing posts, for Pacific Division; 224 barrels compound, for Fortification Division; 6 cases copper wire, for Mechanical Division; 37 pieces steel beams, for Panama Railroad Company; 7 pieces steam shovel chains, 67 bundles baskets, 13 barrels range parts, 90 bales waste, 9 crates wrenches, 8 cases hardware, for stock.

Glenbridge, June 25, from New York, with 123,925 bags cement, for Pacific Division; 101 cases blasting caps, for stock.

Atenas, June 27, from New Orleans, with 50 cases limit switches, for superintendent of erection; 2,448 pieces of lumber, 1,244 bundles of lumber, for Mechanical Division, 58 rolls cotton duck, 511 bags feed, 82 barrels sea coal facing, 150 cases soap polish, 26 pieces piling, 81 pieces lumber, 12 cases hardware, for stock.

Manx Isles, June 27, from New York, with 12 cases fish oil, 200 cases nuts, for stock; 596 bundles structural steel, 327 cases rivets, for Panama Railroad Company; 1,100 car wheels, for Mechanical Division; 460 packages rack castings, 180 cases valve castings, for superintendent of erection.

Colon, June 27, from New York, with 166 cases washers, for Atlantic Division; 75 cases coil springs, for Pacific Division; 24 pieces castings, for superintendent of erection; 400 pieces brake beams, 30 cases electrical material, for Mechanical Division; 127 kegs bolts, 100 barrels castings, 160 bundles steel lathe, 56 pieces steel columns, for Panama Railroad Company; 5,941 bundles steel rods, for Fortification Division; 40 bales rubber hose, 156 cases soap, 200 bundles brooms, 30 cases napkins, 212 kegs bolts and rivets, 85 bales waste, 118 cases caustic soda, 50 cases lavatories, 24 cases paint, 20 bundles paper 24 cases chain blocks, for stock, and a miscellaneous cargo, the whole consisting of 8,576 packages, weighing 800 tons.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 10, 1912, (75th meridian time):

DATE.	Low	High	Low	High
	A.M.	A. M.	P. M.	P. M.
July 4	12.40	6.43	1.00	6.50
July 5	1.17	7.18	1.40	7.28
July 6	1.56	7.58	2.23	8.10
July 7	2.35	8.40	3.10	8.58
July 8	3.22	9.26	4 00	9.51
July 9	4.14	10.20	4.56	10.53
July 10	5.13	11.21	5.56	11.58

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, June 29, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia	Alhajuela	Gamboa	Bohio	Gatun Lake
Sun. June 23	126.6	93.0	16.6	28.7	28.6
Mon. June 24	126 1	92.6	46.6	29.1	29.1
Tues. June 25	125.8	92.3	44.8	29.3	29 3
Wed. June 26	125.8	92.2	45.4	29.5	29.5
Thurs. June 27	125.6	92.1	45.2	29.7	29.7
Fri. June 28	130.4	95.7	48.2	29.9	29.9
Sat. June 29	127.7	94.3	48.2	30.4	30.4
Height of low water to the nearest foot	125.0	91.0	44.0		

The following ships arrived at, or departed from the port of Balboa during the week ending June 29:

Arrivals—June 23, *Manavi*, from Buenaventura; June 24, *Guatemala*, from Callao; June 25, *Pachitea*, from Callao; June 26, *San José*, from San Francisco; June 26, *Quito*, from Guayaquil, June 28, *Peru* (P. S. N.) from Guayaquil; June 29, *Aztec*, from San Francisco.

Departures—June 24, *Huallaga*, to Callao; June 24, Chile, to Guayaquil; June 24, *Limari*, to Valparaiso,; June 24, *Pectan*, to Port Harford; June 29, *Pachitea*, to Callao.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steamship Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Advance	P. R. R.	Thursday	June	27
Panama	P. R. R.	Wednesday	July	3
Allianca	P. R. R.	Tuesday	July	9
Colon	P. R. R.	Monday	July	15
Advance	P. R. R.	Monday	July	22
Panama	P. R. R.	Saturday	July	27
Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21
Allianca	P.R.R.	Tuesday	Aug.	27
Colon	P. R. R.	Tuesday	Sept.	3
Advance	P. R. R.	Monday	Sept.	9
Panama	P. R. R.	Saturday	Sept.	14
Allianca	P. R. R.	Friday	Sept.	20
Colon	P. R. R.	Friday	Sept.	27

CRISTOBAL TO NEW YORK.

Colon	P. R. R.	Wednesday	July	3
Advance	P. R. R.	Tuesday	July	9
Panama	P. R. R.	Monday	July	15
Allianca	P. R. R.	Sunday	July	21
Colon	P. R. R.	Sunday	July	28
Advance	P. R. R.	Saturday	Aug.	3
Panama	P. R. R.	Friday	Aug.	9
Allianca	P. R. R.	Thursday	Aug.	15
Colon	P. R. R.	Wednesday	Aug.	21
Advance	P.R.R.	Tuesday	Aug.	27
Panama	P. R. R.	Tuesday	Sept.	3
Allianca	P. R. R.	Sunday	Sept.	8
Colon	P. R. R.	Sunday	Sept.	15
Advance	P. R. R.	Saturday	Sept.	21
Panama	P. R. R.	Friday	Sept.	27
Allianca	P. R. R.	Thursday	Oct.	3
Colon	P. R. R.	Wednesday	Oct.	9

NEW YORK TO COLON.

Zacapa	U. F. C.	Wednesday	June	26
Prinz Joachim	H.-A.	Saturday	June	29
Sixaola	U. F. C.	Saturday	June	29
Almirante	U. F. C.	Wednesday	July	3
Prinz Eitel Friedrich	H.-A.	Saturday	July	6
Magdalena	R. M.	Saturday	July	6
Santa Marta	U. F. C.	Wednesday	July	10
Prinz August Wilhelm	H.-A.	Saturday	July	13
Metapan	U. F. C.	Wednesday	July	17
Prinz Sigismund	H.-A.	Saturday	July	20
Danube	R. M.	Saturday	July	20
Zacapa	U. F. C.	Wednesday	July	24
Prinz Joachim	H.-A.	Saturday	July	27
Almirante	U. F. C.	Wednesday	July	31

COLON TO NEW YORK.

Metapan	U. F. C.	Thursday	July	4
Carrillo	U. F. C.	Saturday	July	6
Prinz Sigismund	H.-A.	Monday	July	8
Tivives	U. F. C.	Tuesday	July	9
Danube	R. M.	Tuesday	July	9
Zacapa	U. F. C.	Thursday	July	11
Turrialba	U. F. C.	Saturday	July	13
Prinz Joachim	H.-A.	Tuesday	July	16
Almirante	U. F. C.	Thursday	July	18
Prinz Eitel Friedrich	H.-A.	Monday	July	22
Carrillo	U. F. C.	Tuesday	July	23
Clyde	R. M.	Tuesday	July	23
Prinz August Wilhelm	H.-A.	Monday	July	29
Prinz Sigismund	H.-A.	Monday	Aug.	5
Santa Marta	U. F. C.	Thursday	July	25
Turrialba	U. F. C.	Tuesday	July	30
Metapan	U. F. C.	Thursday	Aug.	1

NEW ORLEANS TO COLON.

Parismina	U. F. C.	Saturday	June	29
Cartago	U. F. C.	Wednesday	July	3
Abangarez	U. F. C.	Saturday	July	6
Atenas	U. F. C.	Saturday	July	13
Orleanian	U. F. C.	Wednesday	July	17

COLON TO NEW ORLEANS.

Atenas	U. F. C.	Thursday	July	4
Orleanian	U. F. C.	Thursday	July	4
Parismina	U. F. C.	Thursday	July	11
Cartago	U. F. C.	Thursday	July	11
Abangarez	U. F. C.	Thursday	July	18

Panama railroad steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

McClellan Saddles For Sale.

The Depot Quartermaster has on hand at Mount Hope depot, five 12-inch and one 11-inch McClellan saddles, which have never been taken out of stock, and inasmuch as there is no likelihood of them being required for official use, same are available for sale.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JULY 10, 1912. No. 46.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Lock Gates to be Lead Gray.

The upper guard gates for Gatun Locks, which are almost completed and will shortly be closed to keep the water of rising Gatun Lake from flooding the lower lock levels, are being coated with a final layer of heavy lead gray paint. The material for the gates was painted with a priming coat before it left the factory; at the time of erection it was covered with a coat of red lead, Navy standard; and the third and outer coat is the preparation of the Detroit Graphite Company. This paint was selected provisionally, after tests, though it is believed that only through long experience will the composition of the most satisfactory covering be ascertained. The tests were carried on in a tank and in the culverts below the locks, by painting plates with different kinds of paint, applying coats varying in number and thickness, and exposing in air and water. The light color was selected, in order to minimize the heating of the upper parts of the gates, the expansion from which might cause slight distortions which would interfere with the accurate adjustment of the leaves. This paint will be used on all of the lock gates, with the exception of the seawater gates, which will be covered with an antifouling paint to keep off barnacles.

Canal Work in June.

The grand total of Canal excavation to July 1 was 173,269,815 cubic yards, leaving to be excavated 22,053,564 cubic yards, or less than one-eighth of the entire amount necessary for the completed Canal.

The total for June was 2,339,770 cubic yards, as compared with 2,646,442 cubic yards in June, 1911.

The dry excavation amounted to 1,540,512 cubic yards, and was principally by steam-shovels. The dredges removed 770,590 cubic yards from the Canal prism, and 28,668 cubic yards from the site of the Balboa terminals, in addition to the amount pumped into Gatun Dam by suction dredges. The progress on the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 456,864 cubic yards. Of this total, 24,280 cubic yards consisted of dry excavation near the Locks, and the remainder was wet excavation—343,804 cubic yards from the Atlantic entrance, and 88,780 cubic yards near the Locks.

The total excavation in the Central Division was 1,357,204 cubic yards, 1,348,780 cubic yards from the Culebra Cut section, and 8,424 cubic yards from the Chagres section.

In the Pacific Division, the total excavation was 525,702 cubic yards, 338,006 cubic yards of which were taken out by dredges at the Pacific entrance, and the remainder of the wet excavation from the site of the inner harbor. The total dry excavation in this division amounted to 159,028 cubic yards, 15,700 cubic yards from the locks, dams, and spillways; 23,140 cubic yards from the Balboa terminals, and the remainder, 120,188 cubic yards, from the Canal prism.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Locks, Dam and Spillway	24,280	....	24,280
Mindi	.....	....	...
Total	24,280	... ..	24,280
Wet excavation—			
Atlantic entrance	343,804	....	343,804
Locks, Dam and Spillway	88,780	....	88,780
East Diversion	....	....	....
Total	432 584	....	432 584
Total wet and dry excavation	456,864	....	456 864

CENTRAL DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Culebra Cut	1,348,780	....	1 348,780
Chagres section	8,424	....	8,424
Obispo Diversion	....	....	....
Total	1,357,204	....	1,357,204

PACIFIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—			
Locks, Dams and Spillways	15,700	....	15 700
Balboa Terminals	23,140	....	23,140
Prism, south of Pedro Miguel Locks	120,188	.... .	120,188
Total	159,028	....	159,028
Wet excavation—			
Pacific entrance	338,006	....	338,006
Miraflores Locks	....	....	....
Inner Harbor-Terminals	28,668	....	28,668
Total	366,674	....	366 674
Total wet and dry excavation	525,702	....	525.702

TOTAL CANAL EXCAVATION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation	1 540,512	....	1,540 512
Wet excavation	799,258	....	799,258
Total	2,339,770	....	2,339,770

Mean rainfall along Canal (ten stations), 10.84 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as a prism, diversions, or locks, etc., that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc., It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed, such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks	6,095	78,559	84 654
Concrete laid in dams and spillways	2,622	....	2,622
Fill placed in dams	353,798	53,074	406,872

Leasing Land Near Terminals.

In view of the inquiries made, and likely to be made, concerning leases of land for commercial purposes near the terminals of the Canal, the Chairman and Chief Engineer has appointed a committee, consisting of Col. H. F. Hodges, Mr. H. H. Rousseau, Judge Frank Feuille, and Mr. J. A. Smith, to report on the general subject of leasing lands in the vicinity of the Cristobal and Balboa terminals for private coaling plants, oil fuel plants, storehouses, and offices.

High Work on Gatun Spillway Dam.

A trestle is being built out from the north toe of the east wing of the Gatun Dam to extend over the Spillway dam and facilitate the placing of concrete in the upper levels of the Spillway dam, and the erection of the crest gates by which the flow of water over the ogee will be controlled. The top of the trestle is to be 95 feet above sealevel and will support three rails, combined to form tracks of Isthmian standard and 3-foot gage, the latter for trains from the concrete mixing plant. A large proportion of the concrete yet to be laid in the Spillway dam, amounting to about 23,000 cubic yards, will be placed from this trestle. The greater part of this will be used in the completion of the ogee to its final height of 69 feet above sealevel, a gap of 400 feet in the center of the dam having been left with its top at 50 feet above sealevel, after the completion of the end portions. This will allow a free escape of water from Gatun Lake after it reaches the 50-foot level and decrease the danger of flooding Culebra Cut over the dike at Gamboa. The gap will be filled during the next dry season. In addition to this, the 13 crest piers, between which the gates crowning the ogee will operate, will be built up to 115 feet above sealevel, rising 46 feet above the top of the ogee.

As the trestle is extended the successive piers will be built to about 94 feet above sealevel, so that the tracks may rest in part on them. The placing of the gates between the piers will be accomplished by the use of two wrecking cranes. Each gate is 45 feet wide,

NOTES OF PROGRESS.

(Continued.)

20 feet high, approximately four and one-half feet thick, and weighs 42 tons. Some of the material for the gates is lying in the erecting yard near the machine shops at Gatun, but the assembling, which is to be done by the forces of the McClintic–Marshall Company, is being deferred on account of the need of hastening the work on the upper guard gates in Gatun Locks. The flow of water over the ogee is to be controlled by raising and lowering the gates between the piers. The bottoms of the gates will rest on babbitted sills on top of the ogee when closed, and a stoppage to the elevation of slightly less than 89 feet above sealevel will thus be effected. If it is desired to allow water to escape, the gates, or as many as may be required, will be raised by means of chains running to the tops of the piers and over sheaves into the machinery tunnel. A description of the method of operation was published in THE CANAL RECORD of October 25, 1911.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 90 per cent completed, 202,511 cubic yards, out of a total of 225,000, having been placed at the close of work on July 6. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
July 1	104	6.30	1
July 2	104	5.30	1
July 3	3	.10	1
July 4 (Holiday)			
July 5	28	1.15	1
July 6	44	4 45	1
Total	283	18.10	1
Previously reported	202,228		
Grand total	202,511		

Notice to Mariners.

I am advised that the shoal on the east side of the channel, referred to in my notice which appeared in THE CANAL RECORD of December 20, 1911, where the drill barge *Teredo* is at present engaged, has been raised several feet by blasting, and now carries twenty-two (22) feet at mean tide, or only twelve (12) feet at extreme low tide. All vessels should pass this shoal on the west side of the channel. The two lighthouses on head of tangent No. 1 will admit of ships steering a safe course past this shoal.

Obstruction buoy will be placed as soon as possible, after which shipping should pass to the westward of the buoy.

J. ST. C. HUNT, *Port Captain.*

Balboa, C. Z., July 3, 1912.

Relief of Reservoir Shortage.

The amount of rainfall over the Canal Zone was much below normal during the period between the nominal end of the dry season and May 1. This resulted in a shortage of water in all reservoirs, except Agua Clara, which supplies Gatun, New Gatun, and the Spillway, and it was necessary to resort to emergency measures to maintain the supply of water to other villages, as reported in THE CANAL RECORD of May 15. During May and June, the rainfall was only slightly below normal, except over the relatively small portion of the Canal Zone between Pedro Miguel and Empire, an area lying for the most part near the continental divide. In this area, however, lie the watersheds of the Rio Grande and Camacho reservoirs. In consequence, while the hauling of water in barges to Cristobal was discontinued on June 24, the situation for the towns in the Central Division remained the same. Both reservoirs are rising slowly, but supplementing the supply from the Rio Grande with water from Cocoli Lake, and that from the Camacho, with water pumped from the Chagres River at Gamboa, continues far into the nominal rainy season. At the Rio Grande station, the rainfall recorded during the first six months of 1912 was nine inches, or about 35 per cent below normal. At Camacho station, during the same period, the precipitation was 10 inches, or about 40 per cent below normal. Repeated rains during the past few days, however, indicate that the drouth is broken over the area from Pedro Miguel to Empire, as well as over the rest of the Canal Zone.

CONCRETE WORK IN THE LOCKS.

Over 88 per cent of the concrete for the locks is in place, the amount at the close of work on July 6 being 3,804,267½ cubic yards, out of a total of approximately 4,302,563. A total of 15,688 cubic yards of concrete was laid in the locks during the week ending July 6.

GATUN LOCKS.

Over 94 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on July 6 being 1,882,059½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day of the week ending July 6, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	
July 1	208	3.34	2					208
July 2	410	7.04	2					410
July 3	302	5.16	2					302
July 4								(Holiday)
July 5	182	3.06	2					182
July 6	426	8.20	2					426
Total	1,528	27.20	2					1,528
Previously reported								1,880,531½
Grand total								1,882,059½

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 96 per cent completed, 860,241 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on July 6. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	*136
July 1	176	4.50	1	168	15.50	4		344
July 2	206	5.25	1	291	34.50	5		497
July 3	158	4.00	1	155	12.00	3		313
July 4								(Holiday)
July 5	172	4.50	1	211	30.50	5		383
July 6	142	3.50	1	275	26.50	5		417
Total	854	21.75	1	1,100	119.00	5.4		2,090
Previously reported							4,468	858,151
Grand total							4,468	860,241

*136 cubic yards mixed by hand, omitted from last week.

MIRAFLORES LOCKS.

Over 75 per cent of the concrete for the system of two twin locks at Miraflores was in place July 6, the total amount on that date being 1,061,967 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each of the five working days of last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds...
July 1	932	22.75	7	1,192	17.17	3	447	49 00	7		2,571
July 2	742	18.75	7	1,386	20.58	3	361	39.50	6		2,489
July 3	586	17.42	6	1,382	20.67	3	368	33.00	5		2,336
July 4											(Holiday)
July 5	812	35.17	6	1,212	18.00	3	443	41.00	7		2,467
July 6	490	15.34	6	1,330	19.73	3	387	33.50	6		2,207
Total	3,562	109.43	6.2	6,502	96.15	3	2,006	196.00	6.2		12,070
Previously reported										3,693	1,049,897
Grand total										3,693	1,061,967

EXECUTIVE ORDER.

Hours of Service of Laborers and Mechanics Employed Upon Work for the United States.

By virtue of the authority conferred upon me by Section 2 of the Act entitled "An Act limiting the hours of daily service of laborers and mechanics employed upon work done for the United States, or for any Territory, or for the District of Columbia, and for other purposes," approved June 19, 1912, the provisions and stipulations in said Act are hereby waived, until January first, nineteen hundred and fifteen, as to any contract or contracts entered into in connection with the construction of the Isthmian Canal.

WM. H. TAFT.

THE WHITE HOUSE,
June 19, 1912.
[No. 1547.]

The text of the Act above referred to is, as follows:

[PUBLIC—NO. 199.]
[H. R. 9061.]

An Act limiting the hours of daily service of laborers and mechanics employed upon work done for the United States, or for any Territory, or for the District of Columbia, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That every contract hereafter made to which the United States, or any Territory, or the District of Columbia is a party, and every such contract made for or on behalf of the United States, or any Territory, or said District, which may require or involve the employment of laborers or mechanics shall contain a provision that no laborer or mechanic doing any part of the work contemplated by the contract, in the employ of the contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day upon such work; and every such contract shall stipulate a penalty for each violation of such provision in such contract of five dollars for each laborer or mechanic for every calendar day in which he shall be required or permitted to labor more than eight hours upon said work; and any officer or person designated as inspector of the work to be performed under any such contract, or to aid in enforcing the fulfillment thereof, shall, upon observation or investigation, forthwith report to the proper officer of the United States, or of any Territory, or of the District of Columbia, all violations of the provisions of this Act directed to be made in every such contract, together with the name of each laborer or mechanic who has been required or permitted to labor in violation of such stipulation and the day of such violation, and the amount of the penalties imposed according to the stipulation in any such contract shall be directed to be withheld for the use and benefit of the United States, the District of Columbia, or the Territory contracting by the officer or person whose duty it shall be to approve the payment of the moneys due under such contract, whether the violation of the provisions of such contract is by the contractor or any subcontractor. Any contractor or subcontractor aggrieved by the withholding of any penalty as hereinbefore provided shall have the right within six months thereafter to appeal to the head of the department making the contract on behalf of the United States or the Territory, and in the case of a contract made by the District of Columbia to the Commissioners thereof, who shall have power to review the action imposing the penalty, and in all such appeals from such final order whereby a contractor or subcontractor may be aggrieved by the imposition of the penalty hereinbefore provided such contractor or subcontractor may within six months after decision by such head of a department or the Commissioners of the District of Columbia file a claim in the Court of Claims, which shall have jurisdiction to hear and decide the matter in like manner as in other cases before said court.

SECTION 2. That nothing in this Act shall apply to contracts for transportation by land or water, or for the transmission of intelligence, or for the purchase of supplies by the Government, whether manufactured to conform to particular specifications or not, or for such materials or articles as may usually be bought in open market, except armor and armor plate, whether made to conform to particular specifications or not, or to the construction or repair of levees or revetments necessary for protection against floods or overflows on the navigable waters of the United States: *Provided*, That all classes of work which have been, are now, or may hereafter be performed by the Government shall, when done by contract, by individuals, firms, or corporations for or on behalf of the United States or any of the Territories or the District of Columbia, be performed in accordance with the terms and provisions of section one of this Act. The President, by Executive order, may waive the provisions and stipulations in this Act as to any specific contract or contracts during time of war or a time when war is imminent, and until January first, nineteen hundred and fifteen, as to any contract or contracts entered into in connection with the construction of the Isthmian Canal. No penalties shall be imposed for any violation of such provision in such contract due to any extraordinary events or conditions of manufacture, or to any emergency caused by fire, famine, or flood, by danger to life or to property, or by other extraordinary event or condition on account of which the President shall subsequently declare the violation to have been excusable. Nothing in this Act shall be construed to repeal or modify the Act entitled "An Act relating to the limitation of the hours of daily service of laborers and mechanics employed upon the public works of the United States and of the District of Columbia" being chapter three hundred and fifty-two of the laws of the Fifty-second Congress, approved August first, eighteen hundred and ninety-two, as modified by the Acts of Congress approved February twenty-seventh, nineteen hundred and six, and June thirtieth, nineteen hundred and six, or apply to contracts which have been or may be entered into under the provisions of appropriation Acts approved prior to the passage of this Act.

SECTION 3. That this Act shall become effective and be in force on and after January first, nineteen hundred and thirteen.

Approved, June 19, 1912.

Largest Labor Train Divided.

On account of the preponderance of operations at Miraflores Locks, over that of Pedro Miguel Lock, the early morning labor train from Panama to Pedro Miguel, known as the largest labor train in the world, has been divided into two sections. One leaves Panama at 5.45 a. m., for Pedro Miguel, while the other leaves Panama ten minutes later and proceeds no further than Miraflores Locks. In the evening the return to Panama is effected by two trains, as before.

Immigration at Ports of Colon and Cristobal.

The number of persons who landed at Colon and Cristobal from foreign ports during the month of June was 3,513, consisting of 1,422 cabin, and 2,091 steerage passengers. The number of persons who embarked for foreign ports during the same period was 2,707, consisting of 1,252 cabin, and 1,455 steerage passengers. The number of persons who landed during the month, over those who embarked was 523. The persons who arrived "in transit" in June numbered 1,054.

PERSONAL.

Maj. James P. Jervey, and family; and Mr. H. A. A. Smith, and family, were among the passengers on the *Cristobal*, which docked at Cristobal on Tuesday, July 9.

Police Target Shooting.

Following pistol practice held in each of the four police districts of Ancon, Empire, Gorgona, and Cristobal, during the months of March and April, a competitive firing test was held at the Empire range on Saturday, April 6, in which all of the officers who had made a score of 95 points, or over, in the earlier practice tests, participated. The records made in the competitive shoot were, as follows:

Order merit.	NAME.	Rank.	SCORE.		
			Bulls-eye target.	Moving target.	Aggregate.
1	Leo A. McIntire........	Corporal...	69	47	116
2	Wm. J. Lawson........	1st. c. pol.	67	39	106
3	John W. Maddera......	1st. c. pol.	70	35	105
4	John Acors............	1st. c. pol.	65	35	100
5	Joseph M. Feeley......	1st. c. pol.	67	28	95
6	Roy V. Ewing.........	1st. c. pol.	60	34	94
7	Chas. W. Barber.......	Asst. Chief	55	38	93
8	Walter F. Doby........	Corporal ..	63	30	93
9	Richard L. Hays.......	Corporal ..	65	28	93
10	John A. Mitchell.......	1st. c. pol...	60	30	90
11	Lawrence C. Callaway..	Sergeant...	56	33	89
12	Frank H. Townsend....	1st. c. pol...	66	23	89
13	Thos. A. Campbell.....	Policeman .	63	24	87
14	Arthur Young.........	1st. c. pol...	54	31	85
15	William Cooney.......	1st. c. pol...	60	21	81
16	Walter H. Molen.......	1st. c. pol...	55	21	76
17	Paul F. Lewis.........	1st. c. pol...	59	17	76
18	Lando Oliver..........	1st. c. pol...	52	18	70

Three medals of original design were awarded by the chief of police to the men with the three best scores. The medals are of bronze, the one for the high score having a superimposed Colt's revolver made of gold, and the one for the second best score having a revolver made of silver. These contests were begun in 1911, the one that year being held at the Gorgona pistol range on September 23. Officer John W. Maddera won first place in that contest, Corporal McIntire, second; and Officer John Acors, third.

Independence Day Banquet at Gorgona.

An Independence Day banquet was held at the Commission hotel on Wednesday evening, July 3, under the auspices of the Gorgona clubhouse. Col. Geo. W. Goethals was present as one of the guests. The past, present and the future were discussed. The cover of the menu contained the emblem of a shovel done in the national colors. A number of original verses were recited. The Marine band furnished music for the occasion.

Married.

WHITE-BRAUN—On June 23, in the Union Church of Cristobal, Ida Lovina Braun, to William Morse White, both of Brooklyn, N. Y., the Rev. Carl H. Elliott, officiating. Isthmian residence, Colon.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M'THS.	CULEBRA SECTION.*								CHAGRES SECTION.**				
	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.
Jan....	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	1,416,035	169,447	389,399	175,802	255,385	28,357
Feb ...	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	1,349,569	200,145	450,182	286,309	219,550	66,145
March .	132,840	239,178	815,270	1,290,885	1,434,597	1,509,728	1,728,748	1,539,618	324,233	619,491	484,846	297,339	172,607
April ..	126,749	313,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	329,483	510,020	428,777	102,103	171,731
May....	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	1,405,760	235,902	386,170	248,974	29,783	12,524
June ..	76,905	112,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	1,348,780	322,145	275,900	164,389	32,288	8,424
July .	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	....	345,757	233,897	166,106	22,284	....
August	49,210	244,823	786,866	1,171,927	1,173,370	1,377,714	1,442,402	....	368,683	231,543	234,404	21,892	....
Sept .	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	1,340,173	....	346,948	235,818	234,290	21,272	....
Oct ..	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	1,306,971	....	424,911	221,409	271,409	12,216	....
Nov....	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	....	336,390	93,619	260,882	12,248	....
Dec....	70,630	307,689	1,025 485	1,210,046	1,152,022	1,211,400	1,351,082	....	383,948	105,044	197,481	10,809	....
Totals .	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	16,596,891	8,514,978	3,787,992	3,752,492	3,153,669	1,037,169	459,788

Mos.	ATLANTIC DIVISION.†					PACIFIC DIVISION.¶										
	GATUN LOCKS, DAM AND SPILLWAY.††					PEDRO MIGUEL LOCKS.‡					MIRAFLORES LOCKS, DAMS AND SPILLWAY.‡‡					BALBOA T'M'L'S §
	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.	1912.
Jan..	292,155	102,690	125,011	65,889	1,330	....	83,726	27,320	15,690	24,969	7,203	61,202	31,479	48,744	95,609	....
Feb..	282,797	95,031	123,738	50,511	1,228	....	58,242	9,486	6,809	18,480	39,046	53,689	15,300	12,936	47,426	....
Mar..	374,598	90,051	132,007	51,431	254	....	95,624	6,784	674	1,777	73,194	51,417	18,184	72,739	28,352	....
Apl.	373,456	70,009	103,243	12,548	27,134	....	101,365	9,129	255	13,269	98,943	60,060	12,148	79,751	29,094	....
May.	266,747	52,786	82,958	17,677	24,280	....	57,523	10,405	5,905	26 0 8	73,023	47,588	20,250	57,975	13,096	....
June	244,951	36,556	88 088	4,840	....	13,228	70,971	8,420	7,454	7,794	68,691	55,653	21,994	38,023	7,906	23,140
July..	213,359	39,058	95,503	6,897	....	22,648	77,503	4,410	6,273	....	104,369	50,999	11,990	97,884	....	....
Aug.	188,262	40,346	99,737	22 558	....	22,217	58,025	12,789	220	....	94,248	35,446	17,548	102,249	....	....
Sept.	145,990	49,945	103,040	3,489	....	28,833	48,825	10,405	3,472	....	90,923	31,803	8,590	96,112	....	....
Oct..	154,064	57,321	118,327	112	....	48,875	39,002	7,433	5,365	....	74,700	25,349	9,850	107,790	....	....
Nov.	118,278	63,452	94 552	....	....	55,401	20,207	10,636	12,962	....	52,930	18,644	9,400	84,894	....	....
Dec.	119,904	96,590	72,030	....	....	65,578	28,342	11,195	17,320	....	69,650	20,083	17,906	79,480	....	....
Tot'ls	2,774,561	793,835	1,238,234	235,952	54,226	256,780	739,355	128,412	82 399	92,307	846,920	511,933	194,639	878,577	221,483	23,140

*Total to July 1, 1912, 82,017,802 cubic yards. Excavated in 1904, May to December 243,472 cubic yards.

**Total to July 1, 1912, 12,383,879 cu. yds., of which 192,769 cu. yds. were removed in 1907, 188,239 cu. yds. were removed by sluicing.

†Dry excavation at Mindi Hills began in July, 1907. There were excavated 172,851 cubic yards, 1907; 590,955 cubic yards 1908; 713,015 cubic yards, 1909; 662,995 cubic yards, 1911; 56, 382 cubic yards, 1912; total to July 1, 2,196,198 cubic yards.

¶There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 1,302,246 cubic yards at different points in prism to July 1, 1912 There were also 172 cubic yards removed by steamshovels outside of prism during October, 1908.

††Total to July 1, 1912, 6,463,615 cubic yards: in this total are included 26,628 cubic yards excavated October to December, 1906, and 1 340,179 cubic yards in 1907

‡Total to July 1, 1912, 1,299 253 cubic yards. ‡‡Total to July 1, 1912, 2,653,552 cubic yards §Total to July 1, 1912, 23,140 cubic yards.

WET EXCAVATION.

Mos.	ATLANTIC DIVISION.†						PACIFIC DIVISION.††									
	ATLANTIC ENTRANCE.‖						PACIFIC ENTRANCE.‖‖								BALBOA TERM'NLS*	
	1907.	1908.	1909.	1910.	1911.	1912.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1911.	1912.
Jan.	111,100	490,701	521,050	510,055	520,181	520,228	....	95,940	94,710	460,250	469,529	518,936	379,810	334,735	....	77,383
Feb..	110,002	427,722	444,910	493,448	455,318	581,399	....	95,940	93,480	663,519	671,477	285,791	386,866	432,796	....	....
Mar	84,145	546,886	461,208	412,325	391,736	103,373	....	116,820	92,319	783,281	865,696	462,588	639,761	404,939	....	....
Apl...	69,889	496,366	470,635	190,574	492,579	134,261	....	110,700	104,855	676,539	731,767	534,322	439,622	383,995	....	....
May.	133,847	564,386	315,370	447,578	514,178	229 626	....	112,340	122,157	530,466	720,753	484,509	548,047	388,310	....	....
June.	124,118	572,749	182,575	458,021	452,098	343,804	50,676	62,697	133,575	656,621	844,685	475,486	576,100	338,006	....	28 668
July.	109,922	625,497	348,451	423,092	425,195	....	41,533	98,400	108,338	696,170	733,181	515,782	520,692	....	....	....
Aug..	194,297	638,217	422,846	508,829	367,456	....	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....	....	....
Sept..	403,842	624,776	410,574	451,873	420,434	....	114,308	105,780	153,975	750,080	662,976	473,585	534,667	....	....	....
Oct..	415,120	505,260	314,778	549,788	470,400	....	81,836	97,170	357,122	762,276	720,920	467,873	329,224	....	10,591	....
Nov..	422,797	570,832	457,889	600,708	742,242	....	71,176	92,988	365,423	609,089	627,791	425,870	346,089	....	116,194	....
Dec..	442,835	679,604	489,121	482,370	533,409	....	71,094	90,528	349,551	729,960	727,460	387,034	141,189	....	137,771	....
Tot'ls	2,621,914	6,742,996	4,839,407	5,528,661	5,785,226	1,912,691	485,153	1,191,233	2,143,789	8,056,025	8,399,498	5,538,745	5,472,308	2,282,781	264,556	106,051

†Dredges removed 38,425 cubic yards at Gatun Dam site in 1907, and 1,372,451 cubic yards at Gatun Locks in 1908, 1909, and 1912, of which 88,780 were removed in June, 1912.

††Excavated at Miraflores Locks 309,647 cubic yards in 1909; 156,125 cubic yards in 1910; 176,578 cubic yards in 1911; total 642,350 cu. yds,

‖Total to July 1, 1912, 28,858,360 cu. yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906.

‖‖Total to July 1, 1912, 33,569,532 cubic yards. Of this amount, 1,098 273 yards were removed by monitors. *Total to July 1, 1912, 370,607.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.†			PEDRO MIGUEL LOCKS.††			MIRAFLORES LOCKS.‡		
	1910.	1911.	1912.	1910.	1911.	1912.	1910.	1911.	1912.
Jan	54,136	72,919	34,983	16,273	38,513	15,077	....	24,018	48,416
Feb............	55,696	72,103	26,664	13,218	37,011	12,639	146	20,896	63,893
March	60,998	86,884	27,532	18,793	44,716	9,331	314	31,173	83,706
April...........	63,227	67,361	11,600	24,522	28,635	9,460	13	38,758	97,735
May.	74,273	67,844	7,746	29,576	19,135	10,736	27	36,154	92,095
June	89,401	55,305	6,095	30,631	18,243	10,061	1,603	26,536	68,498
July	84,001	71,046	....	41,464	19,906	....	3 672	32,840	....
Aug............	85,686	66,928	....	51,264	20,736	....	6,030	57,003	....
Sept...........	76,720	57,298	....	50,702	15,379	....	18,133	56,083	....
Oct............	86,949	53,636	....	61,422	25,637	....	22,159	60,873	....
Nov............	75,152	43,907	....	64,248	19,622	....	23,871	41,726	....
Dec............	80,212	43,590	....	42,834	14,360	....	21,533	48,772	....
Total........	886,451	758,821	114,620	444,947	301,893	67,304	97,501	474,832	454,343

Spillway, Gatun Dam, March 17, 1909—July 1, 1912, 203,013 cu. yds.
Miraflores Dam, to July 1, 1912, 321 cubic yards.
†116,072 cu. yds in 1909. ††33,856 cu. yds in 1909 ‡102 cu. yds in 1909

FILL PLACED IN DAMS.

M'THS.	GATUN.*				PEDRO MIGUEL.†		MIRAFLORES.‡			
	1911.		1912.		1911.	1912.	1911.		1912.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan...	211,992	218,690	173,900	239,266	......	38,044	89,243	24,685	....	24,920
Feb..	301,733	211,008	211,399	145,221	......	35,153	87,335	32,404	....	26,475
Mar..	342,800	255,047	242,874	229,059	......	86,252	25,131	23,946	......	24,570
April	368,658	205,130	204,189	286,956	......	67,385	14,100	67,260	....	26,292
May..	419,348	207,751	194,733	227,017	......	21,782	18,353	30,032	....	37,770
June .	432,008	227,996	160,688	193,110	......	15,304	53,858	28,315	....	....
July..	324,947	201,996	....	....	14,865	......	24,957	54,415	....	....
Aug..	259,389	232,426	....	....	24,812	......	25,000	72,203	....	....
Sept..	261,838	194,497	....	....	4,052	......	6,409	34,480	....	....
Oct...	214,320	218,305	....	....	3,400	......	7,130	37,250	....	....
Nov..	266,603	207,157	....	....	3,190	......	14,370	31,800	....	....
Dec..	89,752	233,063	....	....	7,350	......	....	23,730	....	....
T'tal	3,493,388	2,613,066	1,187,783	1,320,629	57,669	263,920	366,336	460,514	....	171,247

*Wet fill to Jan. 1, 1911, 5,833,076 c. y.; Dry fill to Jan. 1, 1911, 6,128,105 c. y.
†Dry fill to Jan. 1, 1911, 260,852 c. y.
‡Wet fill to Jan. 1, 1911, 294,712 c. y. Dry fill to Jan. 1, 1911, 609,863 c. y;

CANAL EXCAVATION TO DATE.

By French Companies....................................		78,146,960
French excavation useful to present Canal....................		29,908,000
By Americans—		
Dry excavation..................................	108,229,851	
Dredges...	65,039,964	
Total..		173,269,815
May 4 to December 31, 1904..........................	243,472	
January 1 to December 31, 1905......................	1,799,227	
January 1 to December 31, 1906......................	4,948,497	
January 1 to December 31, 1907......................	15,765,290	
January 1 to December 31, 1908......................	37,116,735	
January 1 to December 31, 1909......................	35,096,166	
January 1 to December 31, 1910......................	31,437,677	
January 1 to December 31, 1911......................	31,603,899	
January 1 to June 30, 1912..........................	15,258,852	

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation........................	8,659,813	38,929,049	*159,666	8,298,773
Dredges................................	30,269,236		8,458,439	
Central—				
Culebra Cut............................	82,017,802	94,401,681	7,426,203	7,399,615
All other points.......................	12,383,879		*26,588	
Pacific—				
Dry excavation.........................	5,356,596	39,939,085	1,575,484	6,355 176
Dredges................................	34,582,489		4,779,692	
Grand totals...........................		173,269,815		22,053,564

*Estimate exceeded by this amount.

MEDICAL WORK IN SCHOOLS.

System of Inspection, Placed in Effect in Zone Schools in 1911, of Practical Value.

The medical inspection of the pupils of the Canal Zone public schools for white children, which was systematized and carried out with satisfactory results in 1911, has been continued during the school year, from October, 1911 to June, 1912. In order to place the report of the result of this work in permanent form for reference, the report cards of the physicians have been filed in the office of the Division of Schools with the record card of each student. The entire record thus obtained has been worked out in the following tables, which indicate to a certain extent the value of such examination, and the effect of treatment on the work of the pupil. The number of pupils examined was 1,020. Of this number 547, or 53.6 per cent, were found to be normal, and 473, or 46.4 per cent, were found to be detective. The tables below are based on the number of children passing and failing in the examinations for promotions at the end of June.

Table No. 1 indicates the relative numbers of normal children passing and failing, and the relative numbers of defectives, classified under four heads, passing and failing. Table No. 2 indicates the number treated and not treated, and the relative numbers passing and failing. Table No. 3 indicates the relative percentages of promotions and failures as based on the figures in Table No. 1. Table No. 4 indicates the relative percentages of promotions and failures as based on Table No. 2.

Table No. 1.

	Eyes.		Ears.		Nose and Throat.		Teeth.	
	Passed.	*Failed.*	*Passed.*	*Failed.*	*Passed.*	*Failed.*	*Passed.*	*Failed.*
Normal	460	87	460	87	460	87	460	87
Defective	146	51	40	9	132	45	215	59

Table No. 2.

	Eyes.		Ears.		Nose and Throat.		Teeth.	
	Passed.	*Failed.*	*Passed.*	*Failed.*	*Passed.*	*Failed.*	*Passed.*	*Failed.*
Treated	49	21	20	4	53	14	7	1
Not treated	97	30	20	5	79	31	208	58

Table No. 3.

	Eyes.		Ears.		Nose and Throat.		Teeth.	
	Passed.	*Failed.*	*Passed.*	*Failed.*	*Passed.*	*Failed.*	*Passed.*	*Failed.*
Normal	84	16	84	16	84	16	84	16
Defective	74	26	81	19	75	25	78	22

Table No. 4.

	Eyes.		Ears.		Nose and Throat.		Teeth.	
	Passed.	*Failed.*	*Passed.*	*Failed.*	*Passed.*	*Failed.*	*Passed.*	*Failed.*
Treated	70	30	84	16	79	21	87	13
Not treated	77	23	80	20	72	28	77	23

The comparatively small number treated makes any scientific conclusion impossible, but the figures are, at least, indicative. A number of children were found to be defective in respect to two or more of the general items listed in the table. It will be noted that of the total number of normal children 84 per cent passed, while of the total number of defectives 65.3 per cent passed.

Announcements of Examinations.

There will be inaugurated shortly the practice of posting on bulletin boards at Canal Zone post-offices and Commission clubhouses announcements of civil service examinations which will be held for appointment only in the apportioned Departmental Service (that is, for station in Washington, D. C,) and which, therefore, cannot be held in the Canal Zone. These examinations, however, may be applied for in the United States by persons in an unclassified status in the Canal Zone under the following ruling of the Civil Service Commission:

"Any citizen of the United States in the employ of the Federal Government on the Isthmus of Panama in an unclassified status (employes of the Panama railroad have been included in this provision) will be permitted to take an examination for the apportioned Departmental Service in Washington, D. C., in his home state at such time as he may be in such state on vacation. If he passes the examination his name will be entered upon the appropriate register, together with those examined in the open competitive examination of the same kind nearest in point of time to the date of his examination. To avail himself of the privilege extended by this regulation, an employe affected thereby must duly file the necessary application with the United States Civil Service Commission, Washington, D. C., (applications may be secured from the undersigned,) and in connection therewith establish domicile in the state claimed for at least one year immediately preceding, as required by the statute, but his Federal employment on the Isthmus will be held not to vitiate his claim to domicile in the state in which he was actually domiciled immediately preceding such employment on the Isthmus."

The announcements will be posted only for the information of persons in an unclassified status who may contemplate taking such examinations, and the notices will contain the following note: "Not to be held in the Canal Zone. For information only."

Announcements of examinations which may be held in the Canal Zone are posted at present in the seven Commission clubhouses, Ancon Hospital mess, and the Administration buildings at Ancon and Culebra. Their distribution will be extended to include the post-offices.

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., July 5, 1912.

Knights of Pythias Ball and Banquet.

Cruces Lodge, No. 9, Knights of Pythias, will entertain all Knights and their families at their first annual ball and banquet, to be held at the Gorgona clubhouse, on Saturday evening, July 13. A special program has been arranged for those who do not wish to participate in the dancing. The banquet will be given at the Commission hotel at 9.30 o'clock.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending July 6:

Date.	Hours worked.	Cubic Yards.
June 24	8.05	3,276
June 25	8.10	2,854
June 26	7.45	2,781
June 27	7.45	2,672
June 28	8.00	3,173
June 29	8 10	2,798
Total	47.55	17.554
July 1	8.20	2,460
July 2	7.10	2,491
July 3	8.10	2,882
July 5	5.55	1,843
July 6	7.10	2,800
Total	36.45	12,476

Panama Auxiliary, No. 1, U. S. W. V.

The next regular meeting of the ladies of Panama Auxiliary, No. 1, United Spanish War Veterans, will be held at Empire lodge hall on Sunday, July 14, at 2.30 p. m. All members are urged to be present.

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of June, follows:

Destination.	Number Cars.	Cubic Yards.
Pacific Division	3,376	57,288
Atlantic Division	11	267
Central Division	27	405
Fortifications	*27	1,121
Quartermaster's Department	3	75
Civil Administration	1	25
Lighthouse division	9	207
Panama railroad	5	125
Miscellaneous	1	25
Total	*3,460	59,538

*One barge load shipped.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration building, Ancon, on July 17. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration building at 8 a.m., on July 17, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their ability properly to operate an automobile, and must have the automobile with them.

Band Concert.

A band concert will be given by the Isthmian Canal Commission Band at Toro Point, C. Z., Sunday, July 14, 1912, at 2.30 p. m. The program follows:

1. March—*Lance and Shield* .... Laurendeau
2. Selection—*The Paradise of Mahomet*........Planquette & Ganne
3. Intermezzo—*After Sunset*................Pryor
4. Overture—*Hungarian Lustspiel* ....Keler Bela
5. —*Everybody's Doing It Now*............Berlin
   —*Hula, Hula*........................Wernrich
6. Waltz—*Wedding of the Winds*.............Hall
7. Descriptive—*The Racket at Gilligan's*....De Witt
8. Selection—*Remick's Hits*...............Lampe
9. March—*Joe Weber*....................Appelles

CHAS. E. JENNINGS, *Musical Director.*

The next concert will be given at Empire, July 21, at 6 p. m.

THE CANAL ZONE FOURTH.

Large Attendance at Ancon Celebration—Winners of Prizes in Various Events.

The celebration of the Fourth of July at Ancon and Balboa was held successfully, each of the Canal Zone towns from Ancon to Cristobal contributing its quota in the attendance. The weather was all that could be desired up to about 6 o'clock in the afternoon, when a drizzle set in which continued throughout the evening, marring to some extent the enjoyment of the fireworks display, as a great many of the visitors took the first train for their homes after it began to rain. The out-of-town people found the slopes of the hill on which the Ancon schoolhouse stands an ideal one for a picnic ground, as well as furnishing a good view of the track and field events, which were held during the forenoon at the ball park. When the lunch hour arrived, the men, who were accompanied by their families procured refreshments, consisting of sandwiches, oranges, and ice cream, from a stand at the schoolhouse, and then gathered into groups on the greensward under the big trees, and had an old-fashioned picnic. The men, single, or unaccompanied by their families, were served in the space between the batchelor quarters and the ball park, in the rear of Hotel Tivoli. Refreshments were served to all Americans who had contributed to the cost of the celebration, upon presentation of tickets. Ice water, and hygienic and tin drinking cups, were available in different parts of the grounds.

In the afternoon, a large number of visitors journeyed to Balboa to witness the aquatic sports, held in front of the Panama railroad wharf, while others remained in Ancon to see the baseball game. The pyrotechnic display in the evening was held on the old reservoir hill, but was curtailed by reason of rain wetting some of the fireworks. The I. C. C., Marine, and Tenth Infantry bands furnished the music during the day, and in the evening the Tenth Infantry band gave a concert at the Hotel Tivoli. The festivities closed with a dance at Hotel Tivoli, which was well attended.

Both sides of the road leading to Hotel Tivoli, and the one past the fire station, were effectively decorated in the national colors, and three arches were erected, one on the Tivoli road, and two on the intersecting street. In the evening, the roads and the entrance to Ancon Hospital were electrically illuminated.

The results in the various events are, as follows:

TRACK EVENTS.

100-yard dash—R. H. Wetherbee, Empire, first; W. Whittles, Cristobal, second; H. S. Warner, Corozal, third. Time, 11 2-5 seconds.

220-yard run—F. P. Obee, Corozal, first; D. F. Edwards, Ancon, second; J. P. Marshall, Camp Elliott, third. Time 25 1-5 seconds.

440-yard run—M. Myers, Camp Elliott, first; F. P. Obee, Corozal, second; Private Alley, Company G, Camp Otis, third. Time 58 1-5 seconds.

880-yard run—K. Scherzberg, Ancon, first; W. Whittles, Cristobal, second; C. E. Mengel, Culebra, third. Time, two minutes, 20 2-5 seconds.

100-yard low hurdles—D. T. Ellsworth, Culebra, first; J. L. Zirkle, Camp Elliott, second; W. Whittles, Cristobal, third. Time 14 3-5 seconds.

Four-lap relay race,(Four men in each team)—Camp Elliott, first; Empire, second; Ancon, third.

Potato race, (eight potatoes)—C. R. Hilty, Gorgona, first; E. Roberts, Corozal, second; F. W. Hoff, Balboa, third. Time, 38 1-5 seconds.

FIELD EVENTS.

Running high jump—R. A. Koperski, Empire, first; 5 feet 3 inches; P. H. Chadbourne, Corozal, second, 5 feet 3 inches; C. H. Gerhardt, Camp Otis, third, 5 feet 2 inches.

Running broad jump—C. Herring, Gorgona, first, 21 feet ½ inch; H. L. Thompson, Camp Elliott, second, 20 feet 10¾ inches; B. Robinson, Gorgona, third, 19 feet 9½ inches.

12-pound shot put—C. Herring, Gorgona first, 46 feet 9½ inches; McDonald, Camp Otis, second, 43 feet ½-inch; A. Anderson, Camp Elliott, third, 42 feet 6½ inches.

The total of points, by towns, follows:

Position.	Town.	Points.
1	Camp Elliott	18
2	Gorgona	16
3	Corozal	15
4	Empire	13
5	Ancon	9
6	Cristobal	7
7	Culebra	6
8	Camp Otis	5
9	Balboa	1
10	Gatun	0

BOYS' EVENTS.

75-yard dash—Fred Whiston, Corozal, first; William Fraser, Cristobal, second; Arthur Farrell, Cristobal, third.

440-yard relay—Gatun, first; Cristobal, second; Ancon, third. Gatun won this race by default, the Corozal team actually being first, but was counted out on account of a boy from another town having been entered with the team.

SPECIAL EVENTS.

Wall scaling contest between Camp Elliott and Camp Otis—Won by Camp Elliott.

Equipment race, between Camp Elliott and Camp Otis—White, Camp Otis, first; Kline, Camp Elliott, second; Rowen, Camp Otis, third.

Sack race—White, Camp Otis, first; McKeown, Balboa, second; W. Bartlett, Corozal, third.

Three-legged race—Dolbee and Foy, Camp Otis, first; Burmeister and Sims, Gorgona, second; Bartlett and Parkis, Corozal, third.

Tug-or-war, between Camp Elliott and Camp Otis—Won by Camp Elliott, six feet in 54 seconds.

Fat man's race, 75 yards—Dr. Funk, Gorgona, first; Nimbrough, Camp Otis, second; Fouriner, Camp Elliott, third. Time, 9 1-5 seconds.

The officials in the athletic events were, as follows: Chairman, athletic committee, W. H. Warr; referee, William E. Burrell; assistant referee, G. W. Watson; clerk of course, Roy L. Dwelle; assistant clerk of course, C. B. Russell; starter, Lieut. T. S. Clark, scorer, I. H. Fleischman; timekeepers, G. W. Green; C. K. Weston, C. A. Armstrong, C. H. Volz; track judges, Lieut. L. H. Hohl, E. L. Emery, C. K. Weston, L. A. Poltrino; field judges, J. W. Tannehill, J. H. Doran, C. B. Ellington, J. A. Smith; inspectors, R. Kirkpatrick, L. A. Weller, J. W. Ford, C. A. Carter; announcer, W. K. Freeland; marshal, Lieut. G. W. Lewis.

TENNIS TOURNAMENT.

The Fourth of July tennis tournament finals in singles was won by Neely of Empire. The finals in doubles will be played off sometime this week by Herrick-Runyon, Ancon, and Edwards-Fechtig, Tivoli.

BASEBALL GAME.

The baseball game between the Culebra and Commissary-Subsistence teams resulted in a victory for Culebra by a score of 14 to 5. Batteries—For Culebra, Barnes and Cushing; for Commissary-Subsistence, Gufkie, Davis, and Beard.

AQUATIC EVENTS.

Life boat race, distance, three-fourths mile, six-oared and coxswain—Balboa Breezers, Capt. Roberts, first; Balboa Consuming Association, Capt. McKeown, second. Prizes, $25 and $15.

Gasoline boat race, second-class, below 10-horsepower, distance three miles—*U. S. No. 4*, Capt. J. Jones, first; *U. S. No. 5*, Capt. J. Siler, second. Prizes, $20 and $10.

Swimming contest for men, distance 100 yards—J. E. Carpenter, Gorgona, first; A. V. Mitchell, Corozal, second; L. W. Giavelli, Empire, third. Prizes, gold, silver, and bronze medals.

Panga race, one-half mile, two-oared and coxswain—Balboa Nonpareils, Capt. Lydon, first; Corozal No. 1 team, Capt. McBeth, second. Prizes, $15 and $10.

Swimming contest for boys, age limit 16 years, distance 100 yards—William Fraser, Cristobal, first; C. P. Gray, Gatun, second; Alfred Eriksen, Balboa, third. Prizes, gold, silver, and bronze medals.

High diving contest—The total prize money in this event was doubled, and the $80 evenly divided between the four contestants, Roy Nelson, Cristobal; H. R. Tucker, Balboa; George Cataldo, U. S. Marine Corps, Camp Elliott, and Frank Evans, Tenth Infantry, Camp Otis, who dived from the 85-foot platform.

Gasoline boat race, first-class, 10-horsepower and up—Launch *Flamenco*, Capt. Warren, first; launch *Snail*, Capt. Kelly, second. Prizes, $20 and $10.

Relay swimming contest, four-man teams, distance 200 yards—Gorgona team, Capt. Carpenter, first; Corozal team, Capt. Mitchell, second. Prizes, gold medals.

Fancy diving contest—H. H. Sollenberger, Empire, first; E. R. Parsons, Gatun, second; Roy Nelson, Cristobal, third. Prize, gold medal.

Tub race, with paddles, 100 yards—R. Kilcorse, Balboa, first; P. Illwitzer, Balboa, second. Prizes, $10 and $5.

Greased horizontal spar, 60 feet—Won by Capt. Lydon, Balboa. Prize, $15.

Exhibition fire and lifeboat drill—Won by tug *Bolivar*. Prize, $25.

The following events were eliminated: Four-round aquatic boxing contest, log-rolling contest, duck hunt, and obstacle swimming contest.

The officials in charge of the aquatic events were, as follows: W. J. Spalding, chairman; James Macfarlane, referee; J. E. Siler, starter; James F. Jones, scorer; R. H. Sturdivant, announcer; Ralph Finley, M. T. Ransom, J. A. Close, inspectors; W. I. Pender, X. D. Holt, Richard Roberts, E. B. McCormick, S. P. Hughlings, L. E. Williams, judges.

The Day Observed Elsewhere on the Isthmus.

In Panama, following the custom of the past three years, the Fourth of July was observed as a civic holiday, some of the schools, including the National Institute, closing for the entire day, and the remainder taking a halfday recess. At Palo Seco, Taboga sanitarium, and the principal Zone towns, there were fireworks displays in the evening.

Programs for Souvenirs.

Any person desiring extra copies of the Fourth of July programs as souvenirs can procure same by addressing Mr. C. L. Parker, assistant depot quartermaster, Mount Hope depot, Cristobal, C. Z.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, July 6, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.				
	Vigia	Alhajuela	Gamboa	Bohio	Gatun Lake
Sun., June 30	128.3	94.2	46.9	.... *	30.8
Mon., July 1	132.3	96.8	46.9	......	31.2
Tues., July 2	142.0	102.9	56.2	......	32.3
Wed., July 3	129.4	95.4	50.1	......	32.9
Thurs., July 4	127.4	93.7	46.5	......	32.8
Fri., July 5	126.8	93.3	45.6	......	32.7
Sat., July 6	126.7	93.0	45.3	......	32.6
Height of low water to the nearest foot	125.0	91.0	44.0		

*Elevations for this station will not be available hereafter for this table on account of discontinuing daily visits to the station.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 17, 1912, (75th meridian time):

DATE.	High	Low	High	Low
	A.M.	A.M.	P.M.	P.M.
July 11	......	6.17	12.22	6.55
July 12	1.02	7.18	1.23	7.52
July 13	2.04	8.17	2.22	8.47
July 14	2.59	9.12	3.15	9.38
July 15	3.50	10.05	4.07	10.30
July 16	4.40	10.55	4.57	11.18
July 17	5.28	11.45	5.47	......

Misdirected Letters.

ANCON, C. Z., July 3, 1912.

The following insufficiently addressed letters originating in the United States and its possessions, have been received at the office of the Director of Posts, and may be secured upon request of the addressees.

Biggerstaff, Samuel
Bobb, Wm. F.
Butler, John
DePlanty, Clarence
Frediemick, J. P.
Gaskin, W.
Hoff, Mrs. Frank W.
Hull, R. H.
Hillier, C. A.
Joiner, W. P.
Kitsen, William
Lauder, Michael
Ludlum, L. W.
MacDonald, W. R.
Miller, Joseph
Potts, Mrs. S. C.
Potts, Sam. C., jr.
Potter, R. P.
Pulsifer, Mrs. Chase
Ranson, Manfred
Robinson, Hilda G.
Russell, W M.
Stern, A.
Thompson, C. W.
Tuder, Mrs. Ana
White, Mrs. C.
Young, Mrs. F.
Zimmer, Mrs Jacob

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

The Gatun dramatic club will give its comic opera "Singbad, the sailor" at places in the Canal Zone on the following dates: Camp Elliott, July 11; Empire, July 13; Corozal, July 16; Gatun, second engagement, July 18.

COROZAL.

The Corozal team will bowl in Gorgona, Saturday night, July 13.

The results of the Empire-Corozal bowling games at Corozal on Saturday night, July 6 were, as follows:

Empire.				Corozal.			
Pinney	146	203	182	Coonly	174	184	188
Danielson	168	116	146	Souder	170	153	224
Sawtelle	156	169	161	Sessum	147	151	154
Leon	192	124	193	Beal	214	134	131
Henry	144	184	202	Sims	191	150	
				Wilkins			127
Total	806	796	884		896	772	824

The highest bowling scores made so far this month are: Sims, 234; Souder, 224; Beal, 214. High scores for ladies: Mrs. McGeachey, 123; Mrs. LaMire, 119; Mrs. Benninger, 107; Mrs. White, 102.

CULEBRA.

The men of Culebra who are interested in bigpin bowling should get in shape for the tournament which will start shortly.

The high scores for the week in duckpins are, as follows: Palmer, 104; Case, 108; Brown, 100.

The basketball teams will play on Wednesday and Saturday of this week.

The chess team will go to Gatun on Saturday evening, July 13.

EMPIRE.

An order for new library books is to be sent to the United States shortly. Any one wishing to procure any special books will kindly hand in the names of same at the office of the secretary.

The Boy Scout movement is to be reorganized in Empire. All boys will be welcomed as members. Many useful "stunts" are in store for the wideawake boys who join. The first meeting will be held Friday, July 12, at 3 p. m

The standing of the local political tenpin tournament is, as follows:

	Won.	Lost.	P. C.
Suffragettes	4	2	667
Democrats	4	2	.667
Independents	6	3	667
Socialists	3	3	.500
Progressives	1	8	.111

GORGONA.

Regular calisthenic classes are scheduled for Mondays and Thursdays from 7.45 to 8.30 p. m.

The local basketball league will be organized with the idea of getting all of the members interested. The games will be played on Mondays and Thursdays at 8.30 p. m., immediately following the calisthenic classes.

GATUN.

Basketball practice has been started in Gatun. This week the nights will be Tuesday and Thursday. The gymnasium nights are Monday and Wednesday, with moving pictures on Friday night.

The first basketball game of the season will be played between a McClintic-Marshall team, and a team composed of I. C. C. employes on Saturday evening, July 13. The public is invited.

President Gartrell of the chess and checker club announces that he will be pleased to receive challenges for games between the local club and other clubs on the Isthmus.

On Wednesday night, July 3, the record in the pool room for a single day was broken, when 374 games were played on five tables. Arrangements are being made for a series of match games between the champion of Empire, Mr. Pierson, and the all-Isthmian champion, Mr. DePoorter. The games will probably be played in Empire, Gatun, and Cristobal.

CRISTOBAL.

On Wednesday evening, July 10, Mr. F. L. Bernsee, champion checker player of the Isthmus, will meet all comers at simultaneous checkers.

On Friday evening, July 12, a "smoker" will be given at the clubhouse. A special program has been arranged, including many new features, among which will be an exhibition in broad swords by Messrs. MacSparren and Fleming. The former is said to be the champion, in this art, of Scotland. The I. C. C. orchestra and the Cristobal quartet have also been procured and two wrestling matches are being arranged. Minstrels, comedy, and monologues will also feature in the evening's entertainment.

Rainfall from June 1 to 30, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	Ins.		Ins.
Ancon	2.05	15	5.80
Balboa	2.16	15	5.88
*Miraflores	2.10	16	7.51
Pedro Miguel	2.70	18	9.69
Rio Grande	1.58	15	6.63
Central Section—			
Culebra	1.68	15	7.57
*Camacho	1.27	15	7.77
Empire	1.63	15	8.50
Gamboa	2.83	15	11.64
*Juan Mina	2.39	15	12.65
Alhajuela	1.87	15	12.17
*El Vigia	2.27	15	14.51
*Gorgona	2.71	22	14.82
*Frijoles	3.78	15	13.25
*Trinidad	2.00	15	11.80
*Monte Lirio	1.75	15	13.51
Atlantic Section—			
Gatun	1.86	15	14.80
*Brazos Brook	3.11	30	19.12
Colon	3.47	28	15.65
Porto Bello	3.40	23	19.77

*Standard: rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight.

June Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Aver.	Years of Record	Rai'y days 1912
Pacific Section-						
Ancon	8.82	3.40	5.80	8.15	15	13
Balboa	10.44	4.23	5.88	7.95	16	13
Miraflores	13.79	3.71	7.51	10.83	4	16
Pedro Miguel	14.42	5.52	9.69	10.31	5	18
Rio Grande	11.69	4.03	6.63	9.34	8	21
Central Section-						
Culebra	11.16	4.25	7.57	8.86	21	21
Camacho	12.11	4.62	7.77	10.11	6	23
Empire	10.14	5.92	8.50	8.27	9	22
Gamboa	12.08	6.98	11.64	9.70	31	23
Juan Mina	......	9.12	12.65	10.88	2	24
Alhajuela	13.62	10.53	12.17	12.86	13	24
El Vigia	12.02	12.11	14.51	13.89	4	25
Gorgona	12.91	7.21	14.82	9.52	8	24
Frijoles	......	......	13.25	......	1	25
Trinidad	11.11	8.79	11.80	11.08	5	26
Monte Lirio	16.30	11.43	13.51	13.62	5	25
Atlantic Section-						
Gatun	11.41	14.72	14.80	13.78	7	26
Brazos Brook	11.86	16.10	19.12	15.89	6	29
Colon	13.63	15.58	15.65	13.35	42	24
Porto Bello	15.25	18.04	19.77	17.55	5	26

WEATHER CONDITIONS, CANAL ZONE, JUNE, 1912.

Rainfall on the Isthmus during the month of June was generally above normal along the Atlantic coast and over the Chagres River basin, but below normal on the Pacific slope.

The average air temperature was about one degree above normal at each station, while the relative humidity and cloudiness were generally below normal.

There was an excess in wind movement, the prevailing direction being from the northwest, or west. During a wind and rain squall on the Pacific coast on June 15, the wind reached a velocity of 50 miles an hour from the south at Sosa, and 34 miles from the south at Ancon. During this squall, hail was reported on Naos Island.

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.	Date.		Total inches.	Station average.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Colon	29.860	80.2	89	June 9	73	June 16	89	15.65	13.35	24	5,165	W.	26	N.E.	June 17
Culebra	29.848	80.2	91	June 21	70	June 16	92	7.57	8.86	21	3,715	N.W.	25	S. E.	June 15
Ancon	29.837	80.8	94	June 21	70	June 16	90	5.80	8.15	13	4,118	N.W	34	S.	June 15

OFFICIAL CIRCULARS.

Witnesses of Fourth of July Disturbance in Panama City.

CULEBRA, C. Z., July 6, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

I quote below letter from Capt. R. E. Ingram, Tenth Infantry, Camp E. S. Otis, in which he requests, as recorder of a board of investigation, statements from employes having personal knowledge concerning the disturbance which occurred in Panama city on the evening of July 4:

> "I have the honor to inform you that it is reported that a number of American civilians are competent witnesses and are ready to submit evidence, if called upon, concerning the disturbance which occurred in Panama city on the evening of July 4.
>
> Presumably some of them are employes of the Commission.
>
> Would you please make public throughout the Zone, as soon as practicable, the fact that any of the employes of the Commission having knowledge of, or present at the said disturbance, please make affidavit of all said facts and transmit same to Capt. R. E. Ingram, Tenth Infantry, Camp E. S. Otis, recorder of a board of investigation, on the disturbance.
>
> If any one desires to appear before the board instead they may do so at any time of the day at headquarters building, Camp E. S. Otis.
>
> If not convenient for any one desiring to submit testimony, to be sworn to their written statements right away, it is requested they send in to me written statements of what they are willing to swear to, and which swearing may be done later. Particular information is requested as to whether or not any soldiers or marines were armed, and if the means used by the police were justifiable."

GEO. W. GOETHALS, *Chairman.*

Visit of Pay Car in July Deferred Three Days.

EMPIRE, C. Z., July 6, 1912.

TO ALL CONCERNED:

The pay car, for the month of July only, will be deferred three days, the same schedule being adhered to, except that it will be carried out on the 15th, 16th and 17th, instead of the 12th, 13th, and 14th, respectively, as heretofore.

No pay certificates at present undelivered shall be delivered prior to Friday, July 12, and no payments, except in the case of persons who have left the service or are going on leave, will be made at any office Friday, Saturday, or Sunday, July 12, 13, or 14.

EDWARD J. WILLIAMS, *Disbursing Officer.*

Approved: GEO. W. GOETHALS,
Chairman and Chief Engineer.

Unauthorized Lights in Quarters.

CULEBRA, C. Z., July 3, 1912.

CIRCULAR No. 311-A.

The Quartermaster's Department is authorized to have removed at the expense of the individual responsible for their installation all unauthorized lights in quarters. Hereafter, in case any unauthorized installations are made, the employe responsible for same will be subject to proper disciplinary measures.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting General Foreman, Mechanical Department, P. R. R.

PANAMA RAILROAD COMPANY,
COLON, R. P., July 2, 1912.

TO ALL CONCERNED:

Effective July 3, Mr. J. P. Dovell, in addition to his duties as operator in charge of the Brown hoist, will act as general foreman of the Mechanical Department in place of Mr. J. H. Bryant, appointed acting general foreman during the absence of Mr. W. H. Readle, general foreman.

J. A. SMITH,
General Superintendent.

Acting Master of Transportation, P. R. R.

PANAMA RAILROAD COMPANY,
COLON, R. P., July 3, 1912.

TO ALL CONCERNED:

During the absence on leave of Mr. A. K. Stone, master of transportation, effective July 3, 1912, Mr. L. B. Maggard, in addition to his duties as chief dispatcher, is appointed acting master of transportation.

J. A. SMITH, *General Superintendent.*

The following ships arrived at, or departed from, the port of Balboa during the week ending July 6:

Arrivals—June 30, *City of Sydney*, from San Francisco; July 1, *Ucayali*, from Callao; July 4, *Huasco*, from Valparaiso.

Departures—July 1, *Guatemala*, to Valparaiso; July 1, *San José*, to San Francisco; July 1, *Quito*, to Guayaquil; July 4, *Peru*, to Guayaquil.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning July 11, 1912.

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Plate, per pound	9
Corned, No. 1, per pound	†14
Corned, No. 2, per pound	†12
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	12½
Rib roast, second cut (not under 3½ pounds,) per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	25
Venison (Imported), Stew, per pound	6
Forequarter (not under 6½ pounds), per pound	9
Rack (not under 5½ pounds), per pound	20
Saddle (not under 7½ lbs.), per pound	20
Leg (not under 9 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24

MISCELLANEOUS.	
Caviar, Russian in ¼-lb. jars, jar	89
Livers—Beef, per pound	11
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	13
Devonshire Farm, per pound	19
Sweetbreads—Beef, per pound	25
Eggs, fresh, dozen	26
one-half dozen only	14
Bluefish, per pound	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	14
Fluke, fresh, per pound	10
Shads, fresh, each	50
Roes, shad, pair	25

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	1.35
Fancy roasting, milk fed, med., each	1.00
Fancy roasting, corn fed, about 5½ pounds each	1.10
Fancy roasting, corn fed, about 4½ pounds, each	90
Fowls, each ††60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.35
Hens, milk fed, for roasting, about 3 pounds each	50
Broilers, milk fed, each	70
Broilers, corn fed, each	60
Turkeys, per pound	23
Squabs, each	35
Capons, each	2.10
Ducks, teal, per pair	50
Ducks, Blackhead, pair	60
Partridges, pair	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30

CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	22
Sugar cured, Half, for boiling, per pound.	21
Boiled, per pound	28
Hocks, per pound	?8
Beef, salt, family, per pound	†12
Bacon—Breakfast, whole piece, per pound	23
sliced, per pound	24
Pork, salt, family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18

DAIRY PRODUCTS.	
Butter—Creamery, special, per pound	38
Sheffield Farms, extra, fancy per lb.	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	22
Swiss, per pound	28
Edam, each	1.00
Parmesan, lb.	35
Neufchatel, cake	6
Gouda, per pound	34
Snappy, cake;	10
Milk (Certified), per bottle	**20
Butter, bottle	**15
Fer-mil-lac, bottle	**20
Ice cream, quart	?25
½-gallon	?50

VEGETABLES AND FRUITS.	
Beets, per pound	5
Celery, per head	15
Cabbage, per pound	5
Cucumbers, per pound	5
Carrots, per pound	5
Cauliflower, per pound	15
Lettuce, per pound	10
Onions, per pound	4
Potatoes, white, per pound	3½
sweet, per pound	3
Rhubarb, per pound	4
Squash, per pound	5
Turnips, per pound	4
Tomatoes, per pound	8
Yucca, per pound	3
Yams, per pound	3
Apples, per pound	10
Canteloupes, each	8
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Oranges, California navel, per dozen	30
Oranges, Jamaica, per dozen	12
Pineapples, each	10
Watermelons, each	35

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

††Fowls weigh each about as follows: 3, 3½, 4, 4½ and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight, is supplied and refund note sent for difference.

?Sold only from commissaries; no orders taken for delivery.

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon and Balboa, during the week ending July 6:

Aztec, June 29, from San Francisco, with 2 bales dredge sleeves, for Atlantic Division.

Tivives, June 30, from New York, with 62 pieces white oak lumber, for Mechanical Division; 2,906 bundles steel bars, for Fortification Division; 12 cases gaskets, 100 cases varnish, 100 cases toilet paper, 321 coils rope, 30 barrels rosin, 47 cases ink, 10 cases electrical material, for stock.

Prinz Sigismund, July 2, from New York, with 203 pieces steel rods, for Atlantic Division; 25 bundles coil springs, 9 cases tinware, for stock.

Zacapa, July 3, from New York, with 205 pieces steel plates, for superintendent of erection; 2,804 bundles steel bars, for Fortification Division; 75 bundles wheelbarrows, 50 pieces steel channels, 6 cases insulating tape, for stock.

Parismina, July 4, from New Orleans, with 19,918 pieces lumber, 74 pieces piling, 98 bags feed, 23 rolls cotton duck, for stock; 8 car wheels, 3,818 pieces lumber, for Mechanical Division; 293 bundles castings for superintendent of erection.

Advance, July 4, from New York, with 67 barrels flour, 76 bundles staves and hoops, 8 cases trucks, 46 cases soap, 15 crates valves, 113 cases paint, 18 pigs tin, 20 kegs horseshoes, 58 pieces steel beams, 12 reels wire rope, 222 kegs nuts, 20 barrels pipe-fittings, 2,477 pieces sewer pipe, 38 pieces steel channels, 300 cases linseed oil, 7 crates pipe, for stock; 50 barrels insulators, 28 reels cable, for superintendent of erection; 9 crates galvanized pipe, 14 reels cable, 150 cases coil springs, for Pacific Division; 50 barrels enameled brick, 88 pieces steel beams for Panama railroad; and a miscellaneous cargo, the whole consisting of 4,285 packages, weighing 460 tons.

Sachsenwald, July 5, from Hamburg, with 15 cases castings, for superintendent of erection.

McClellan Saddles For Sale.

The Depot Quartermaster has on hand at Mount Hope depot, five 12-inch and one 11-inch McClellan saddles, which have never been taken out of stock, and inasmuch as there is no likelihood of them being required for official use, same are available for sale.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; or the Royal Mail Steamship Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Panama	P. R. R.	Wednesday	July	3
Allianca	P. R. R.	Tuesday	July	9
Colon	P. R. R.	Monday	July	15
Advance	P. R. R.	Monday	July	22
Panama	P. R. R.	Saturday	July	27
Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21
Allianca	P.R.R.	Tuesday	Aug.	27
Colon	P. R. R.	Tuesday	Sept.	3
Advance	P. R. R.	Monday	Sept.	9
Panama	P. R. R.	Saturday	Sept.	14
Allianca	P. R. R.	Friday	Sept.	20
Colon	P. R. R.	Friday	Sept.	27

CRISTOBAL TO NEW YORK.

Advance	P. R. R.	Tuesday	July	9
Panama	P. R. R.	Monday	July	15
Allianca	P. R. R.	Sunday	July	21
Colon	P. R. R.	Sunday	July	28
Advance	P. R. R.	Saturday	Aug.	3
Panama	P. R. R.	Friday	Aug.	9
Allianca	P. R. R.	Thursday	Aug.	15
Colon	P. R. R.	Wednesday	Aug.	21
Advance	P.R.R.	Tuesday	Aug.	27
Panama	P. R. R.	Tuesday	Sept.	3
Allianca	P. R. R.	Sunday	Sept.	8
Colon	P. R. R.	Sunday	Sept.	15
Advance	P. R. R.	Saturday	Sept.	21
Panama	P. R. R.	Friday	Sept.	27
Allianca	P. R. R.	Thursday	Oct.	3
Colon	P. R. R.	Wednesday	Oct.	9

NEW YORK TO COLON.

Almirante	U. F. C.	Wednesday	July	3
Prinz Eitel Friedrich	H.-A.	Saturday	July	6
Magdalena	R. M.	Saturday	July	6
Santa Marta	U. F. C.	Wednesday	July	10
Prinz August Wilhelm	H.-A.	Saturday	July	13
Metapan	U. F. C.	Wednesday	July	17
Prinz Sigismund	H.-A.	Saturday	July	20
Tivives	U. F. C.	Saturday	July	20
Danube	R. M.	Saturday	July	20
Zacapa	U. F. C.	Wednesday	July	24
Prinz Joachim	H.-A.	Saturday	July	27
Almirante	U. F. C.	Wednesday	July	31
Carrillo	U. F. C.	Saturday	Aug.	3
Clyde	R. M.	Saturday	Aug.	3
Santa Marta	U. F. C.	Wednesday	Aug.	7
Turrialba	U. F. C.	Saturday	Aug.	10

COLON TO NEW YORK.

Zacapa	U. F. C.	Thursday	July	11
Prinz Joachim	H.-A.	Tuesday	July	16
Almirante	U. F. C.	Thursday	July	18
Prinz Eitel Friedrich	H.-A.	Monday	July	22
Carrillo	U. F. C.	Tuesday	July	23
Clyde	R. M.	Tuesday	July	23
Prinz August Wilhelm	H.-A.	Monday	July	29
Santa Marta	U. F. C.	Thursday	July	25
Turrialba	U. F. C.	Tuesday	July	30
Metapan	U. F. C.	Thursday	Aug.	1
Prinz Sigismund	H.-A.	Monday	Aug.	5
Oruba	R. M.	Tuesday	Aug.	6
Tivives	U. F. C.	Tuesday	Aug.	6
Zacapa	U. F. C.	Thursday	Aug.	8

NEW ORLEANS TO COLON.

Abangarez	U. F. C.	Saturday	July	6
Atenas	U. F. C.	Saturday	July	13
Orleanian	U. F. C.	Wednesday	July	17
Parismina	U. F. C.	Saturday	July	20
Abangarez	U. F. C.	Saturday	July	27
Atenas	U. F. C.	Saturday	Aug.	3
Orleanian	U. F. C.	Wednesday	Aug.	7

COLON TO NEW ORLEANS.

Parismina	U. F. C.	Thursday	July	11
Cartago	U. F. C.	Thursday	July	11
Abangarez:	U. F. C.	Thursday	July	18
Atenas	U. F. C.	Thursday	July	25
Orleanian	U. F. C.	Thursday	July	25
Parismina	U. F. C.	Thursday	Aug.	1

Panama railroad steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m., for New Orleans via Limon, on Thursdays, at 3 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 11 a. m.; for Bocas del Toro, on Mondays and Tuesdays at 5 p. m.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JULY 17, 1912. No. 47.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of June is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

New Wharf in Commercial Use.

The new lumber wharf of the Panama railroad received its first commercial ship on July 13, when the *Cuzco* berthed with a cargo of 650,000 feet of lumber, consigned to the Isthmian Canal Commission from Seattle. The *Cuzco* is a twin-screw steel steamship of approximately 4,000 tons, and is registered in Tonsberg, Sweden. Since its first arrival at the port of Balboa, on August 23, 1910, it has been regularly engaged in carrying lumber from Puget Sound ports to the Canal Zone, making about four round trips a year.

The channel to the new wharf draws 40 feet at mean tide, The wharf will be in regular use for lumber laden vessels, which will unload with their own gear, until it is relinquished as a part of the repair dock in the permanent terminal arrangements.

Progress in Culebra Cut.

Cross sections of Culebra Cut indicate that to the balance of 7,400,000 cubic yards carried forward as remaining to be excavated at the close of the fiscal year on July 30, there should be added 4,600,000 cubic yards to cover slides, silting, and material yet to be moved to lessen the load on the tops of banks. The total estimated amount of material to be removed from the Cut, from the beginning of the fiscal year 1912, in order to complete the Canal is thus 12,000,000 cubic yards. The Central Division has been able to keep down the unit cost of excavation to such an extent that it is believed that the 12,000,000 cubic yards can be taken out at a division cost no greater than that formerly estimated.

It is planned to keep all of the 38 steam-shovels now employed in the Central Division at work as long as possible. With the present equipment, no difficulty is anticipated in finishing the excavation by July 1, 1913, unless large slides should develop only a short time before that date.

The latest slide development is on the west bank, a little south of Las Cascadas station. Slides near both ends of the former Whitehouse storage yard are threatening the tracks. It is believed that some of the six parallel yard tracks will have to be torn up, but the advance of the work to completion in the adjacent sections of the Cut has made the Whitehouse yard relatively unimportant, and a part of it can be abandoned without inconveniencing the operations of dirt and labor trains. A total of about 700,000 cubic yards of material is in motion in the two slides.

Riprapping Embankments on Relocated Line.

The embankments of the relocated line on the Panama railroad, from Gatun to Dump 6, passing through the proposed Gatun Lake region, are being riprapped with rock from Culebra Cut in anticipation of the rise of the lake. An average of six trainloads of rock is used daily. Some of the fills through swamps were made with considerable difficulty, but during the five months in which the line has been used for all traffic between Gamboa and Gatun, they have stood up satisfactorily.

Scraper Grading at Gatun Locks.

The work of grading at the upper end of the east backfill at Gatun Locks is being carried on by means of dismounted wheelscrapers, actuated by a two-drum hoisting engine. It is intended to finish this face of the backfill to a 1-on-3 slope. A natural clay knoll extends beyond the plain of the finished slope, and the grading consists in cutting off this knoll and carrying the clay to the outer edge of the fill. The engine is located on the top of the finished backfill, and operates the head and back-haul cables, which pass through anchored pulleys. The pulleys can be adjusted in position, so as to conduct the scrapers to any desired location for cutting or dumping. Two scrapers are used, each of ½-cubic yard capacity, and they are permanently attached, in tandem, to the hauling cables in such a manner as to enable the filling and dumping to be done without detaching either cable. The average haul is about 200 feet, and the scrapers move about 125 yards per day, at a cost of about 20 cents per yard.

Improved Levers for Motor Cars.

An improved system of levers, used to apply and release the band brakes on Isthmian Canal Commission motor cars Nos. 6, 7, and 8, has been devised by the inspector of motor cars at the Culebra garage and tested on cars Nos. 6 and 7. It has been found to render the brakes approximately fifty per cent more effective, and is being installed on car No. 8. The system is composed of one lever and two rods, instead of a lever, three rods, and an equalizing bar, as used heretofore.

Heated Rock Phenomena in Culebra Cut.

On the phenemena of heated rock in Culebra Cut, opposite station No. 1862, north of Paraiso slide, the Commission geologist has reported that the rock of the area affected is a limy sandstone, or marl, in beds from an inch to a foot, or more, in thickness, overlying a mass of intruded basalt. Between the beds are soft, friable partings, some of which contain, in addition to lime, a considerable proportion of volatile hydrocarbonic material. When several pounds of this were panned down to a few ounces the concentrate showed a rather large proportion of finely divided pyrite. Under the microscope, some of the crystals measured less than .1 millimeter in diameter.

The starting point of the heating is the atmospheric oxidation of this finely divided pyrite. Oxidation begins as soon as the pyrite-bearing layers are exposed to the worm, moist atmosphere. The heat generated is sufficient in a short time to promote rapid oxidation of the large pyrite crystals, which, in turn, raises the temperature beyond the kindling point of the volatile hydrocarbons in the rock, and these begin to burn in a smoldering way. When all of the oxidizable material is consumed the rock cools. The section affected has practically burned itself out.

Construction of Emergency Dams.

Erection of the emergency dams for the locks has been retarded by delays in shipment of material, due to the wharfmen's strike in Baltimore, and has been confined to the dam for the east chamber of Gatun Locks. Consignments received to the first of this week, however, have brought the total of material on hand to about 2,000 tons, of which 700 tons are pig iron to be used as counterweight on the short arm of the dam. The wicket girders of the dam for the east chamber of Gatun Locks are being assembled in temporary position in a pit next the side wall, and close by the concrete base on which the swinging bridge of the dam is to be pivoted. The long arm of the bridge is to be built out over the pit, and the girders will be raised and attached to it. The pivot base and the concrete quadrant, around which the short arm of the bridge is to swing, have been placed by the Isthmian Canal Commission. All of the steel work, including a track over the quadrant for the passage of rollers, is to be done by the contractor. The contract is in the hands of the United States Steel Products Company, the fabrication and erection being done by the American Bridge Company. The force engaged on the work at present numbers 12 men, under the direction of a resident engineer.

Work on the dams for the Pedro Miguel and Miraflores locks will not be begun until the greater part of that at Gatun has been

NOTES OF PROGRESS.

(Continued.)

completed. The dams for Miraflores Locks will be somewhat lighter than the others. A total of approximately 12,000 tons of material will be used at the three locks.

Canal Laborers Going to Guatemala.

The Chief Quartermaster has received a statement from the United Fruit Company showing that 1,339 laborers, formerly employed on the Canal works, have been sent by that company to Guatemala during the past few months to work on its plantations there. Of this number, 446 were West Indians, 250 were Greeks, 473 were Spaniards, and 170 were Hindoos.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 90 per cent completed. 202,939 cubic yards, out of a total of 225,000, having been placed at the close of work on July 13. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
July 8	24	1.00	1
July 9	32	2.00	1
July 10	72	4.00	1
July 11	112	6 00	1
July 12	112	6.30	1
July 13	76	4.30	1
Total	428	24 00	1
Previously reported	202,511		
Grand total	202,939		

Central Division Unloaders for June.

The following statement shows the number of trains and lidgerwood cars unloaded by the Central Division during the month of June:

Location.	No. of unloaders.	No. of trains.	No. of cars.
Balboa	4	1,340	26,800
Miraflores	2	534	10,680
Gamboa	3	883	18,533
Totals	9	2,757	56,013

Balboa Hotel Abandoned.

The Commission hotel at Balboa was abandoned on July 16, and will be torn down to make way for the terminal improvements. The steward in charge has been transferred to the hotel at East Balboa, the steward of the latter being transferred to Porto Bello.

Examination for Levelman and Transitman.

An examination of candidates for promotion to the grades of levelman and transitman will be held at Culebra on Sunday, August 11, 1912, at 9 a. m.

Employes who desire to take the examination will please make application through the head of the department in which they are serving, to A. B. Nichols, chairman of the examining board, Culebra.

Candidates attending the examination should bring with them tables of the circular functions, and triangles.

Victim of Yellow Fever.

Orella Fioilan, cook on board the steamship *Chile* of the Pacific Steam Navigation Company, was admitted to Santo Tomas Hospital, Panama, about 5 p. m., Tuesday, July 9, suffering from yellow fever, from which he died about noon, Sunday, July 15. The *Chile* left Guayaquil near midday, July 3, and reached Culebra Island quarantine near midnight, July 6. Her passengers, and such of her crew who had been ashore at Guayaquil were detained at the station, while the officers and the crew who had not been ashore were released from quarantine about 7 o'clock, Sunday morning, July 7.

I. B. of S. S. and D. M.

Local No. 19, I. B. of S. S. and D. M., will hold its regular meeting at 12.15 p. m., on Sunday, July 21, at the Empire lodge hall. All members are requested to attend as there is business of importance to be discussed.

Owing to the congestion in accommodations for bachelors, a type-18 house has been removed from Empire and is being reconstructed at Corozal. It will take care of 48 men.

Sailing of the Cristobal.

The sailing date of the steamship *Cristobal* has been set for Saturday, July 20, from Pier 11, Cristobal, C. Z., at 3 p. m.

CONCRETE WORK IN THE LOCKS.

Over 89 per cent of the concrete for the locks is in place, the amount at the close of work on July 13 being 3,823,159½ cubic yards, out of a total of approximately 4,302,563. A total of 18,892 cubic yards of concrete was laid in the locks during the week ending July 13.

GATUN LOCKS.

Over 94 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on July 13 being 1,883,726½ cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day of the week ending July 13, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	
July 8	214	3.52	2	....	....	.....	....	214
July 9	272	4.32	2	....	....	.....	....	272
July 10	154	2.44	2	....	....	.....	....	154
July 11	236	4 02	2	....	....	.....	....	236
July 12	456	8.44	2	....	....	.....	....	456
July 13	322	5.24	2	....	....	.....	....	335
*Portable mixer	....	......	.....	*13	....	.....	....	....
Total	1,654	29.18	2	13	....	.....	....	1,667
Previously reported	....	....	.....	....	....	.....	....	1,882,059½
Grand total	....	....	.....	....	....	.....	....	1,883,726½

*The 13 yards shown for the portable mixer, are reinforced concrete, placed on July 13.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 97 per cent completed, 863,462 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on July 13. The record for each of the working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	
July 8	94	2.50	1	323	30.50	5	....	417
July 9	132	3.50	1	365	33.50	6	10	507
July 10	188	5.00	1	408	40.00	6	15	611
July 11	152	3.75	1	399	33.50	6	....	551
July 12	238	6.00	1	339	36 00	6	....	577
July 13	214	5.50	1	344	37.50	6	....	558
Total	1,018	26.25	1	2,178	211.00	5.83	25	3,221
Previously reported	....	....	......	....	....	......	4,468	860,241
Grand total	....	....	......	....	....	......	4,493	863,462

MIRAFLORES LOCKS.

Over 76 per cent of the concrete for the system of two twin locks at Miraflores was in place July 13, the total amount on that date being 1,075,971 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each of the six working days of last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
July 8	966	34.17	6	1,154	16.75	3	422	45 50	7	....	2,542
July 9	228	12.58	5	1,198	17.17	3	460	44.50	6	....	1,886
July 10	942	34.00	7	1,008	14 33	2	354	33.00	6	....	2,304
July 11	636	17.17	6	1,084	15.58	3	265	24.50	4	....	1,985
July 12	1,262	37.17	7	1,001	14.92	3	391	42.50	5	....	2,654
July 13	1,020	42.66	7	1,230	20.00	3	383	38.10	6	....	2,633
Total	5,054	177.75	6.33	6,675	98.75	2.83	2,275	228.10	5.66	....	14,004
Previously reported	....	....	......	....	....	......	....	....	......	3,693	1,061,967
Grand total	....	....	......	....	....	......	....	....	......	3,693	1,075,971

CANAL WORK IN JUNE.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., July 12, 1912.

The Honorable the Secretary of War,
Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of June, 1912.

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	24,280	1,357,204	159,028	1,540,512
Work excavation, wet	Cubic yards	432,584	....	366,674	799,258
Total work excavation	Cubic yards	456,864	1,357,204	525,702	2,339,770
Plant excavation, dry	Cubic yards	....	....	....	....
Plant excavation, wet	Cubic yards	....	....	....	....
Total plant excavation	Cubic yards	....	....	....	....
Total Canal excavation	Cubic yards	456,864	1,357,204	525,702	2,339,770
Material placed in dams	Cubic yards	353,798	....	53,074	406,872
Concrete placed in locks and dams	Cubic yards	8,717	....	78,559	87,276
Explosives used	Tons (Gross)	42 33	183.43	29.23	254.99
Rock drilled	Feet	34,158	386,954	59,411	480,523
Tracks removed	Miles	....	12.21		12.21
New tracks laid	Miles	2.69	11.05	6 28	20.02
Rock crushed	Cubic yards	....	....	68,462	68,462
Cement used	Barrels	13,459	175	80,169	93,803
New roads built	Miles	.34	....	....	.34
Water mains laid	Feet	250	....	696	946
Sewers laid	Feet	280	296	2,144	2,720
Open drains and ditches dug	Feet	37,750	45,783	900	84,433
Average daily force		5 332	7,281	6,421	19,034
Average rainfall	Inches	15.22	10.40	7.78	10 80

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the division engineers and the erection subdivision of this office, the inspection of this work being cared for by the masonry and lock structures subdivision. Work was continued on the grinding of fixed irons and preparing valve chambers for the installation of the valves and bulkheads, which work is being done under supervision of this office. This subdivision is also charged with general inspection of masonry work of all the locks.

LOCK GATES AND PROTECTIVE DEVICES.

Up to June 20, a total of 52,322 tons of structural material was accepted at the rolling mills, in addition to 1,414 tons on replace orders, of which 1,509 tons were accepted between May 20 and June 20. This nearly completes the material required, excepting for the spare parts. A total of 39,139 tons of structural riveted steel had been shipped from the Rankin shops, or about 76 per cent of the total contract weight of this class. Of this last item, 3, 093 tons were shipped between May 20 and June 20. About 50 per cent of the material for the gates in the intermediate lock at Gatun, and about 15 per cent of that for the 77-foot upper and middle gates in the upper lock at Miraflores remain to be shipped; also, practically all of the steel for the safety and lower gates in the upper lock, and for all the gates in the lower lock at Miraflores.

LOCK GATE ERECTION.

Gatun—Upper guard gates, 54 feet 8 inches high, leaves Nos. 37 to 40, inclusive—The work on these leaves during the month consisted principally of fitting fender angles, odd riveting, and repairing the same for water test. The riveting and calking were practically completed. *Leaves Nos. 37 and 38*—Air chambers were tested for watertightness and accepted as satisfactory, with the exception of bulkheads in leaf No. 37, which have not been tested. These leaves were closed to a mitering position during the month. The bottom girder and sheathing on the upstream side of leaf No. 38 were given one coat of red lead paint. The principal work necessary for the completion of these gates is the aligning and babbitting of the bearing plates along the quoin and miter posts of all four leaves; also, the attachment of the water seals and water testing on leaves Nos. 39 and 40. A small amount of fitting, riveting, and miscellaneous work remains to be done. The footwalks and handrailings are not in place on any of the leaves, and practically no field painting has been done. The erection of these four leaves began May 27, 1911.

Upper gates, 77 feet high, leaves Nos. 33 to 36 inclusive—The work during the month consisted of riveting on the sheathing and grinding the ends for the placing of reaction castings. On leaf No. 36, the end reaction castings were placed. Practically all material, except castings, is in place, and about 85 per cent of the rivets have been driven. The erection of these leaves began October 9, 1911.

Middle gates, upper lock, 77 feet high, leaves Nos. 29 to 32, inclusive—With the exception of reaming of holes, nearly completing the same, and the placing of false work framing, very little work was done during the month on these leaves. Practically all the structural steel is in place, but no sheathing rivets have been driven. The erection of these four leaves began January 27, 1912.

Safety gates, upper lock, 77 feet high, leaves Nos. 25 to 28, inclusive—The interior framing of these leaves is practically riveted. Three-quarters of these rivets were driven before June 1. The sheathing is assembled complete, with the exception of the downstream sheathing, which would be in the way of the footwalk. However, the sheathing plates are not fully bolted, and practically no reaming has been done, nor rivets driven through the sheathing. The erection of these leaves began April 1, 1912.

Middle gates, lower lock, 77 feet high, leaves Nos. 9 to 12, inclusive—The skeletons of these leaves have been erected practically to their full height. About 25 per cent of this material was erected prior to June 1. About 15 per cent of sheathing has also been erected, all of it during the month of June. The second set of erection bridges is engaged on these leaves. The erection of these leaves began April 12, 1912.

The first set of erection bridges was moved to the site of leaves Nos. 21 to 24, inclusive (lower gates, upper lock,) and the bottom girders of three leaves were placed.

Pedro Miguel—Upper guard gates, 54 feet 8 inches high, leaves Nos. 50 to 53, inclusive—The riveting of these leaves was practically completed during the month. About 50 per cent of the grinding of end plates for the reception of reaction castings has been accomplished. The erection of these leaves began August 7, 1911.

Upper gates, 79 feet high, leaves Nos. 54 to 57, inclusive—A small amount of reaming was about the only work accomplished on these leaves during the month. The work was delayed on account of not having bolts to bolt up same.

The erection bridges have been moved from this site for the erection of the intermediate gates, leaves Nos. 58 to 61, inclusive.

Safety gates, 79 feet high, Nos. 62 to 65, inclusive—The status of work on these leaves stands as reported for the month of May, with the exception of fitting a few doubling plates, and a small amount of reaming and riveting. The erection of these leaves began December 15, 1911.

Lower gates, 79 feet high, leaves Nos. 66 to 69, inclusive—The erection of the skeletons of these leaves was completed, and the riveting of same is 98 per cent completed. About 50 per cent of the sheathing has been erected. The erection of these leaves began about May 1, 1912.

Lower guard gates, 47 feet 4 inches high, leaves Nos. 70 to 73, inclusive—The skeletons of these leaves were erected to their entire height. The heel and upper pintle castings on leaves Nos. 72 and 73 were fitted and secured to bottom girders. Work on these leaves was delayed, due to lack of material. The erection of these leaves began April 9, 1912.

Miraflores—No material has been erected in these locks.

The total tonnage of lock gates erected on the Canal to July 1, was, without regard to its being fully reamed or riveted, about 19,631 tons, out of a total of about 58,000 tons, or about 34 per cent. Of this, 3,759 tons, or about 6½ per cent, were erected during the month of June. The total of field rivets driven was 963,500, or about 16 per cent, of which 183,500, or about 3⅛ per cent, were driven during the month of June.

The tonnage erected and the number of rivets driven were greater than in any preceding month. The riveting, particularly, is still far behind the program.

LOCK GATE RECESS COVERS.

All recess covers (36) have been erected at Gatun, 35 riveted and 20 grouted. At Pedro Miguel, all of the 20 covers have been erected and riveted.

CHAIN FENDERS.

From a report received from the assistant engineer in the United States, in charge of inspection of this work, dated June 5, it is noted that the greater part of the material for one chain fender had been completed up to that time, and it is understood that same will be shipped about July 10. A second test of one of the resistance valves was also under way during the month.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection, as follows:

(*1*) *For the rising stem and cylindrical valve machines, motors, and limit switches, purchased under Circular No. 614*—The two trial rising stem gate valve machines, Nos. 260 and 261, were completely installed and both were tested out satisfactorily during the month, the motor and control wiring being temporarily connected. Preliminary tests were made on rising stem gate valve machine No. 261, with valve disconnected from crosshead. After operating machine light for a number of cycles, the valve stem and roller train were connected to crosshead and valve operated complete. The operation of the valve and machine was entirely satisfactory. This machine is erected complete, excepting the babbitting of the bottom seal and installation of permanent wiring and control.

Twenty-nine rising stem gate valve machines have been shipped from the works of the contractor. To date, nineteen machines have been received on the Isthmus. Machines Nos. 245, 247, and 249, received on June 1, are to be installed at Gatun Spillway.

Satisfactory progress is being made in the delivery of the various groups named in the contracts as parts not required to be tested.

Twenty-two of the 118 cylindrical valve machines were received during the month, making a total of 32 machines received to date. Forty-four machines have been shipped from the works of the contractor.

Three auxiliary culvert valve machines were received during the month.

Satisfactory progress is being made on the frames and shafts for the rising stem gate valve machine motors at the works of the contractors.

At the works of the contractor, all parts of all limit switches have been completed and shipment has commenced. Fifty limit switches, out of a total of 232 ordered, have been received to date.

(*2*) *For the gate and girder hoisting machinery for the emergency dams, purchased under Circular No. 616*—The first gate hoisting machine was tested in the forepart of the month at the works of the Otis Elevator Company, and operated satisfactorily. The motor on the gate hoisting machine operated satisfactorily without excessive heating. Advice was received that the first girder hoisting machine would be ready for test at the works of the contractor about June 18.

(*3*) *For the rack railway and other material relative thereto, purchased under Circulars Nos. 619, 636–D, 628–635, 647, 666, and 688*—Out of the 57 items of all of the above circulars, 29 items are 100 per cent completed and satisfactory progress was also made on the balance of the items under these circulars.

(*4*) *For the gate operating machines, Class 1, and miter forcing machines, Class 2, and motors for same, Classes 3 and 4, purchased under Circular No. 627*—Miter gate moving machine No. 37 was operated without strut and found to operate satisfactorily. The gate was connected to machine by strut and gate was swung in air on June 13. Owing to scaffolding on recess side of gate, the gate was not swung through entire stroke.

Miter forcing machine No. 918 was given a preliminary trial before placing machine on lock gate for final try out of machine.

Satisfactory progress was made on shipments of material applying on the miter gate moving machines.

(*5*) *For the hydroelectric station equipment, purchased under Circular No. 648*—One generator was completed at the works of the contractor during the month and is now ready for test. Work on the equipment progressed satisfactorily during the month.

(*6*) *For the electric towing locomotives, purchased under Circular No. 650*—Work progressed satisfactorily on the trial electric towing locomotive. Award has not yet been made for the remaining 39 locomotives.

(*7*) *For the Spillway gate machines and pumps, purchased under Circular No. 661*—Work on these machines and pumps progressed satisfactorily during the month.

(*8*) *For locomotive cranes for erection plant of machinery and electrical equipment, purchased under Circular No. 662*—All cranes, eight in number, with auxiliary hooks and lines, are now on the Isthmus and in service.

(*9*) *For control apparatus for all locks, purchased under Circular No. 679*—Drawings under this circular are being submitted by the contractor.

(*10*) *For motors, pumps, float switches, and starters purchased under Circular No. 681*—Work on this equipment progressed satisfactorily during the month.

(*11*) *For crossovers, purchased under Circular No. 688*—Drawings have been submitted by the contractors, which have been approved, and they have begun casting this material.

The following is a summary of the work accomplished in the field by the erecting forces:

Atlantic Division Locks—The force installing machinery and electrical equipment on the Isthmus assembled 888 feet of towing track, including the assembly of rack sections, channels, anchor bolts and T rails, and bonding of the same. (This does not include the installation of conductor rails, conductor slot covers, and brackets.) A total of 5,502 feet of towing track has been placed and partly finished to date.

Miter gate moving machine No. 37 was completed. The work of installing cylindrical valve machines Nos. 540 to 548, inclusive, is 75 per cent completed. Valve leaves were installed and all fixed steel finished and lined in guard valves Nos. 264 to 269, inclusive. For steel in valves Nos. 262 to 263, all lining was finished and valve leaves were lowered in chamber ready for seals. The work of placing the lining plates on caisson sills at the south end of the east and west chambers, upper locks, was started, and about 75 per cent completed during the month.

During the month, 482.3 cubic yards of concrete were placed; 170.8 cubic yards were placed for rising stem gate valve machines, 51.1 cubic yards for cylindrical valve machines, 207.4 cubic yards for rack railway, 35.6 cubic yards for recess covers, and the balance for emergency dams, west wall intake, miter gate moving machines, manhole cover seats, etc. Previously reported, 1,333.1 cubic yards; total amount placed to the end of the month, 1,815.4 cubic yards.

Pacific Division Locks—The quantity of material received to date has not permitted work at the Pacific Division locks to advance with any appreciable degree of rapidity, except for towing locomotive track. All activity in this division, so far as the erection work is concerned, has been at Pedro Miguel. During the month, bulkhead frames were installed for valves Nos. 331 and 332; 14 sets of anchor bolts were installed for cylindrical valve machines; and 1,900 feet of towing track were installed. The total amount of this towing track laid to date at Pedro Miguel Locks is 3,712 feet. Sixty-four cubic yards of concrete were placed during the month.

EMERGENCY DAMS.

At the mills, the following material was manufactured during the month: Nickel steel, 308 tons; riveted structural steel, 174 tons; turning and wedging machinery, 73 tons; pig iron (for counterweight) 700 tons.

At the shops, the following material was fabricated during the month: Nickel steel, 278 tons; riveted structural steel, 387 tons; turning and wedging machinery, 53 tons.

The condition of the work for each dam is, as follows:

Gatun, east dam—Nickel steel, 100 per cent completed; structural carbon steel, including gates, 95 per cent punched, 90 per cent assembled, 95 per cent riveted, 80 per cent finished; turning and wedging machinery, 100 per cent completed.

West dam—Nickel steel, 88 per cent completed; structural carbon steel, with exception of gates, 95 per cent punched, 90 per cent assembled, 85 per cent riveted, 80 per cent finished; gates, 80 per cent completed; turning and wedging machinery, 65 per cent completed.

Pedro Miguel, east dam—Nickel steel, 99 per cent rolled; structural steel, 96 per cent rolled; turning and wedging machinery, 75 per cent completed in foundries, and at present being machined in shops.

West dam—Nickel steel, 99 per cent rolled; structural steel, 96 per cent rolled; turning and wedging machinery, 99 per cent completed at foundries, and at present being machined in shops.

Miraflores, east dam—Nickel steel, 40 per cent rolled; structural carbon steel, 35 per cent rolled; turning and wedging machinery, 20 per cent completed at foundries.

West dam—Nickel steel, 40 per cent rolled; structural carbon steel, 35 per cent rolled; turning and wedging machinery, 20 per cent completed at foundries.

INSPECTION ON ISTHMUS.

In the report for the month ending May 20, it was stated that the contractor expected to begin erection by the middle of June, at which time 1,100 tons of material were expected to reach the Isthmus. Owing to delays in shipment, this material has just arrived. When this material is delivered at the dam sites, the contractor will have sufficient material on hand to begin erection. Contractor expects to begin erection by the middle of the present month.

AIDS TO NAVIGATION.

Construction—Range No. 9–11, Pacific Division—Same status as when last reported. The AGA acetylene outfits at these two towers had not been working satisfactorily, the supply of gas having been exhausted before the estimated time. Slight leaks in the connections and at some of the valves were discovered, to which a representative of the AGA Company, on the Isthmus, attributed the early exhaustion of the gas. These leaks were remedied and notes made for some improvements in the connections to prevent corrosion. It was also found that the sun valve was not absolutely moisture proof, the interior of it having shown signs of corrosion. The representative of the company advised that it would be useless to clean it and it was left as it was. The gas was shut off from it and it is not now in use. The leaks discovered in the valve in range tower No. 9 were at the filter, manifold, sun valve, and pressure regulator. Those discovered in the valve in range tower No. 11 were at the pressure regulator only.

Range No. 1–2—Pacific Division—Same status as when last reported.

Range No. 13–14—Pacific Division—Same status as when last reported.

Range No. 4–5—Atlantic Division—Same status as when last reported.

Range No. 21–22—Gatun Lake section—Same status as when last reported.

Range No. 24–25—Gatun Lake section—Same status as when last reported.

Range No. 1–2, Gatun Lake section, front tower—The entrance door was hung, the concrete stairway was completed, the wrought iron gallery railing was set up, the ball ventilator was set in place, and the reinforced concrete railing around the base of the tower was 50 per cent completed.

Range No. 5–6—GatunLake section—Sixty-yards of crushed rock, 60 yards of sand, a hoisting engine, steel forms, and other material were delivered at the site of the front tower; a temporary landing was constructed, and an A-frame cableway is being rigged up.

General plant of lighthouse subdivision at Balboa—The following reinforced concrete material was cast during the month: Ten beacon roofs, two foundations for beacons, twenty-four 48 by 48-inch buoy sinkers, two 24 by 24-inch buoy sinkers. On June 20, the gang at this point was transferred to the work on the west breakwater caisson at Mount Hope dry dock, where they were employed until the end of the month.

West Breakwater light—Limon Bay—The wooden forms for the reinforced caisson foundation were completed, and on the 20th of June, they were set up in the Mount Hope dry dock, the reinforcing was placed, and 360 yards of concrete poured, thus completing the caisson up to a height of 13 feet. The caisson is 46 by 46 feet in plan, containing 16 compartments, and the total height will be 35 feet.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month, three shovels were engaged in the borrow pit excavation for the locks backfill and construction tracks, 97,195 cubic yards of material being removed.

Backfill—Backfilling behind the side and center walls of the locks was continued. The quantity placed during the month aggregated 86,416 cubic yards. The total placed to July 1 amounted to 1,554,175 cubic yards, which was 85.16 per cent of the entire backfill.

Receiving and issuing material—The receipts of sand exceeded the issues by 27,005 cubic yards; the consumption of cement exceeded the issues by 5,192 barrels; the issues of rock amounted to 10,248 cubic yards, no rock being received.

Mixing and placing plants—Plant No. 1 and all portable mixers were kept in satisfactory operation during the month.

Concrete work—There was a decrease of 1,650½ cubic yards in the amount of concrete laid, as compared with the figures for the preceding month. The daily average for the 25 working days was 244 cubic yards, as compared with a daily average of 287 cubic yards during May. The total amount of concrete placed during the month was 6,095 cubic yards. The bucket measurement exceeded the place measurement by 166 cubic yards. Of the total, 3,117 cubic yards were placed in the upper lock, 968 cubic yards in the middle lock, and 2,010 cubic yards in the lower lock. The concrete work for the entire lock system was 93.78 per cent completed at the end of June.

OPERATION OF THE PERMANENT CONCRETE CONSTRUCTION PLANT.

Length of working day (hours)	9 00
Average number of hours per day worked, per strand of cableway laying concrete (actual working time)	.55
Average number of mixers per day	2.10
Average hourly output per mixer (actual working time) cubic yards	58.34
Average amount of concrete laid per hour, per strand of cableway (actual working time) cubic yards	21.26
Concrete laid (cubic yards) cableways	3,475.00
Concrete laid (cubic yards) derricks	2,631.00
Concrete laid (cubic yards) portable mixers	155.00
Total amount of concrete laid (cubic yards)	6,261.00

GATUN DAM.

Construction during the month increased the total fill, as determined by cross sections of the material in place, by 353,728 cubic yards, making the total amount in place 19,818,979 cubic yards. On July 1, the Dam was 92.18 per cent completed.

Hydraulic fill—The dredges increased the hydraulic fill by 160,688 cubic yards, making the total hydraulic fill in place June 30th, 9,955,078 cubic yards.

Dry fill—The material received from the steamshovels, amounting to 193,110 cubic yards, was placed on the north and south toes of the Dam, east and west of the Spillway, making the total dry fill in place 9,863,901 cubic yards.

GATUN SPILLWAY.

Backfill—Backfilling was not extended during the month, the total remaining at 16,236 cubic yards.

Concrete—The work of placing concrete was continued, the amount placed during the month aggregating 2,622 cubic yards. The concrete work for the Spillway was 90 per cent completed.

Excavation—During the month, there were 848 cubic yards of earth and rock removed in preparing foundations, the total Spillway excavation on June 30 being 1,591,086 cubic yards.

HARBOR AND CHANNEL SECTION.

Dredging from the Ocean to Mindi—Four dredges removed 284,760 cubic yards of earth, and 59,044 cubic yards of rock from the Canal prism. In addition, the dredge *Mindi* removed 29,811 cubic yards of rock from the Panama railroad Cristobal terminal docks. On June 30th, 40 feet of water could be carried from zero to zero plus 2,100 feet, 35 feet to mile post 4 plus 3,000 feet, 30 feet to mile post 4 plus 3,150 feet, and 20 feet to mile post 5 plus 5,100 feet.

Approach to Gatun Locks—Two dredges removed 74,091 cubic yards of earth and 14,689 cubic yards of rock from the Canal prism.

PORTO BELLO.

During the month, 7,219 cubic yards of rock were shipped to Toro Point for use in the construction of the breakwater.

ROCK AND WATER SERVICE.

In connection with this service, plant steamed 4,805 miles, handled 336 barges, and carried 2,060 passengers.

WEST BREAKWATER, COLON.

During the month, 19,742 cubic yards of material were excavated, of which 19,092 cubic yards were dumped from the trestle and 650 cubic yards furnished to fortification work. The single track trestle was extended 32 feet. On July 1, the trestle extended 10,927 feet from shore. Seven thousand three hundred and sixty-five cubic yards of Porto Bello rock were unloaded, making the total to July 1st, 65,133 cubic yards.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads and oil pipe lines were maintained and extended as required to facilitate construction work. Work was continued on the Colon street improvements.

Central Division.

During the month of June, the total amount of material excavated in the Central Division was 1,357,204 cubic yards, of which 297,237 cubic yards were classified as earth and 1,059,967 cubic yards as rock. The entire quantity was removed by steamshovels. The total—1,357,204 cubic yards—was primary excavation for the Canal prism.

The daily average number of steamshovels at work during the month was 40.10, and the total number of shovel days was 1,002½, as compared with 40.54 at work during the month of May, with 1,054½ shovel days.

For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work.	W'k'g days.	Av. yards per shovel day
		Rock.	Earth.			
1911:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
June	1,401 016	1,282,811	118,205	40.92	26	1,316.22
1912:						
June	1.357 204	1,059 967	297,237	40 10	25	1,355.81

Raintall at Empire: 1911, 5.92 ins.; 1912, 8.50 ins

The above table shows the average output per shovel to be 2.92 per cent greater in June, 1912, than in the corresponding month of 1911.

The total amount of material excavated from the prism in the Culebra section of the Central Division in June, 1912—1,348,780 cubic yards—was the highest record in that section for the month of June, except June, 1911, when 1,401,616 cubic yards were removed.

The total estimated amount of material to be removed in the Central Division, according to revised estimate of July 1, 1911, was 101,801,296 cubic yards, and up to July 1, 1912, a total of 94,401,681 cubic yards had been removed, leaving 7,399,615 cubic yards to be removed, in order to complete all excavation in the Central Division. From these figures it will be seen that 92.73 per cent of all excavation in the Central Division had been accomplished up to the close of the month of June, and 7.27 per cent remained unaccomplished.

Considering the two sections which compose the Central Division, the excavation completed and that to be completed at the close of June operations was, as follows:

CULEBRA SECTION.	*Cu. Yds.*
Completed	82,017,802
To be completed	7,426,203
CHAGRES SECTION.	***Cu. Yds.***
Completed	12,383,879

From the above figures it will be seen that the Culebra section, locally known as "Culebra Cut," was 91.70 per cent completed, with 8.30

per cent to be completed. The Chagres section was completed so far as dry excavation is concerned, but it is estimated that it will be necessary to remove about 300,000 cubic yards of wet excavation in this section.

During the month, 41,042 cubic yards of material were dumped in the embankment for the new roadbed for the relocation of the Panama railroad, increasing the total amount used for this purpose to 4,237,576 cubic yards.

During the month, no material was furnished to the Atlantic Division for use in the construction of the Gatun Dam, the total amount remaining at 5,374,310 cubic yards.

There was also furnished to the Panama railroad 11,366 cubic yards of material for the terminals in Colon.

The daily average number of laborers at work on the whole division during the month was 6,588, while the daily average number of gold employes was 693.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

Excavation—The total excavation during the month amounted to 135,888 cubic yards, of which 98,413 cubic yards were classified as earth and 37,475 cubic yards as rock.

Filling and Embankment—During June, 15,304 cubic yards of dry filling were added to the prism on the west dam at Pedro Miguel, increasing the total amount of material in place at the close of the month to 582,841 cubic yards. The backfill at Pedro Miguel was increased by 25,837 cubic yards, the total amount in place at the end of the month aggregating 654,537 cubic yards.

At Miraflores, 37,770 cubic yards were added to the dry fill in the toes of the west dam. The total quantities of dry and hydraulic filling in place at the end of the month were 1,241,624 cubic yards and 661,048 cubic yards, respectively. The backfill was increased by 69,022 cubic yards, the total aggregating 625,287 cubic yards at the end of the month.

Pedro Miguel Lock—Excavation in the Canal prism between the Pedro Miguel and Miraflores locks was continued, two steamshovels being employed. One steamshovel was engaged during the month in excavating the high ground along the east side of the locks, and one shovel was used to excavate the foundation for the northwest wing wall. The spoil from these four shovels was utilized for backfilling behind the lock walls, for topping the west dam, and for filling the south guide wall. The amount of iron placed in the masonry aggregated 458,872 pounds.

Concrete work—The total amount of concrete and large stone laid at Pedro Miguel was 10,061 cubic yards, as compared with 10,736 cubic yards during May. The concrete was placed, as follows: Four thousand five hundred and eighty-one cubic yards in the north center guide wall; 1,714 cubic yards in the northwest wing wall; 839 cubic yards in the east wall; 281 cubic yards in the center wall; 768 cubic yards in the west wall; 570 cubic yards in the southwest wing wall; 782 cubic yards in the northeast wing wall; 121 cubic yards in the south center guide wall; 269 cubic yards in the floors; and 136 cubic yards around ducts, 113 cubic yards of which were placed in operating tunnel A, and 23 cubic yards in operating tunnel B.

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours)	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	4.32
Average number of mixers per day	5.96
Average hourly output per mixer (actual working time) cubic yards	13.34
Large stone laid, cubic yards	....
Concrete laid, cubic yards	10,061.00
Total concrete laid, cubic yards	10,061.00

Mixing plant consisted of one 2-cubic yard mixer, and a daily average of 4.88 half-yard mixers. Placing plant consisted of a daily average of 4.88 half-yard mixers discharging directly into forms. Output of one 2-cubic yard mixer was placed by a daily average of 2.44 cranes and derricks.

Miraflores Locks—The work of sinking and filling concrete caisson foundations for the north center guide wall was continued; likewise the construction of the reinforced concrete wall base girders and the concrete wall proper. Dry excavation, principally in the Canal prism south of the locks, was continued, six steamshovels being employed, and the spoil utilized for backfilling behind the east and west lock walls and for filling the Miraflores west dam. The work of removing chamber crane No. 2 from the upper to the lower lock chamber was commenced and about four-fifths completed at the end of the month. The crane is being lowered bodily. The amount of iron placed in the masonry aggregated 506,819 pounds.

Concrete work—The total amount of concrete and large stone laid at Miraflores was 68,498 cubic yards, as compared with 92,085 cubic yards during May. The concrete was placed, as follows: Four thousand five hundred and seventy cubic yards in the north center guide wall; 10,615 cubic yards in the east wall; 34,760 cubic yards in the center wall; 15,944 cubic yards in the west wall; 455 cubic yards in the southeast wing wall; 100 cubic yards in the west dam core wall; 1,958 cubic yards in the floors; and 96 cubic yards around ducts, 60 cubic yards of which were placed in operating tunnel A, and 36 cubic yards in operating tunnel C.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	12.00	12.00
Average number of hours per day laying concrete and large stone (actual working time)	5.04	5.77
Average number of mixers per day	6.52	8.56
Average hourly output per mixer (actual working time) cubic yards)	37 01	30.85
Average amount of concrete and large stone laid per hour per berm or chamber crane. (actual working time) cubic yards	62.94	....
Large stone laid	....	....
Concrete laid (cubic yards)	56,150.00	12,386.00
Total concrete laid (cubic yards)	56,150 00	12,386.00

Permanent plant consisted of four berm and three chamber cranes. Auxiliary mixing plant consisted of three 2-cubic yard mixers and eight ½-cubic yard mixers. Auxiliary placing plant consisted of a daily average of 3.48 ½-cubic yard mixers discharging directly into forms, and a daily average of 3.36 locomotive cranes and derricks.

DISTRICT NO. 2—DREDGING.

The following is a statement of the output of the six dredges which were in operation during the month, and of the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.		PLANT.		Total.	Remarks.
		Earth.	Rock.	Earth.	Rock.		
		Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*	
Cardenas	Dipper	7,400	11,850	....	....	19,250	Scow measurement
Corozal	Ladder	11,862	11,862	....	....	23,724	Place measurement
Marmot	Ladder	12,498	2,235	....	....	14,733	Place measurement
Mole	Ladder	8,575	5,840	....	....	14,415	Scow measurement
Badger	Ladder	....	....	51,866	....	51,866	Place measurement
Culebra	Suction	187,208	....	....	....	187,208	Scow measurement
Total	....	227,543	31,787	51,866	....	311,196	
Hydraulic excavation	....	78,676*	....	....	....	78,676	Place measurement
Grand total	....	306,219	31,787	51,866	....	389 872	

*Excavated from Canal prism, south of Miraflores lock site.

CHAMÉ SAND EXCAVATION.

Approximately 59,500 cubic yards of sand were excavated at Punta Chamé and delivered at Balboa.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, and oil pipe lines were maintained and extended as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours)	8.00
Average number of hours per day (actual working time)	7.35
Average number of cubic yards crushed per hour per working day	304.28
Average number of cubic yards crushed per working hour	372.48
Total output for the month (cubic yards)	68,462.00

Relocation of Panama Railroad.

During the month, 5,362 cubic yards of material were excavated, increasing the total excavation at the close of the month to 10,182,498 cubic yards. Thirty-three thousand five hundred and ninety-nine cubic yards of material were placed in embankment, increasing the total for this purpose to 16,500,553 cubic yards.

No temporary trestle was driven during the month. At the end of the month, there were 64,512 linear feet of 70-pound, and 163,908 linear feet of 90-pound track. The force averaged 447 men.

Quartermaster's Department.

LABOR.

During the past few months, 446 West Indians, 250 Greeks, 473 Spaniards and 170 Hindoos left the Isthmus for Guatemala to work for the United Fruit Company.

QUARTERS.

The addition to the Hotel Tivoli was completed during the month, the total cost of the same being $57,819.

The construction of the terminals at Balboa has necessitated the abandonment of the Commission settlement of old Balboa. Only three buildings remain above the line of excavation, and the removal of these buildings will probably be necessary at a later date. In order to accommodate families whose removal from old Balboa was required, the old labor camp in the vicinity of Ancon corral is being converted into gold married quarters, and likewise the buildings at the laborers' camp near Ancon cemetery. A number of other buildings from the Spillway at Gatun, and from old Balboa, are being moved and re-erected in the former camp. The upper floor of the hotel at East Balboa is being converted into bachelor quarters, and the police station at old Balboa will be moved to East Balboa and utilized as bachelor quarters.

MATERIAL AND SUPPLIES.

The value of material received during the month was $1,182,453.30. Supplies were delivered by 39 steamers, the total weight of cargo exclusive of lumber, ties, and piling being 41,438 tons. Cement deliveries have been reduced. Lumber receipts have fallen off considerably.

Subsistence Department.

The operation of European laborers' messes, colored laborers' kitchens, and line hotels showed a net profit of $3,081.05. The operation of the Hotel Tivoli showed a net profit of $721.14. The net profit on subsistence operations was $3,964.01.

Department of Civil Administration.

COURTS.

During the month, 37 civil and 34 criminal cases were disposed of in the Circuit Courts, and 94 civil and 510 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for June amounted to $345,598.43, and the fees to $1,657.96. Receipts from stamp and card sales; and newspaper postage, aggregated $7,388.79. The total collection of revenues made by the division was $45,489.35, and the collection on account of court fines, costs, and fees $2,792.29.

Twenty-four vessels entered at, and 25 cleared from the port of Ancon; and 25 vessels entered at, and a like number cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 496, of whom 439 were men and 57 women. Twenty-four nations, or forty separate states and dependencies, were represented. The total number of arrests for the month was a decrease of 185, as compared with the month of May. Six convicts were committed to the penitentiary and seven were discharged, leaving 141 convicts in confinement at the close of the month. The cost of guarding and subsisting the convicts was $2,682.57, and the value of their work on Canal Zone roads was $2,451.05.

DIVISION OF FIRE PROTECTION.

Eight fires were reported in the Canal Zone during the month. The damage to Commission property was $700.

DIVISION OF PUBLIC WORKS.

In the city of Panama the average consumption of water was 1,309,107 gallons, and in Colon 1,382,783 gallons.

The usual inspection and maintenance work in this division was performed during the month.

DIVISION OF SCHOOLS.

The net enrollment in the white schools during the month was 1,245, and the average daily attendence 849.1, or 94 per cent of the enrollment; in the colored schools, the net enrollment was 1,535, and the average daily attendance 669.1, or 84 per cent of the enrollment. Forty-five white and 28 colored teachers employed on June 28; the schools were closed on that date for the summer vacation. There were five members in the graduating class.

Department of Sanitation.

The total number of deaths from all causes among employes was 28. These were divided, as follows: From disease 16, from violence 12, giving the annual average per thousand of 3.91 and 2.93, respectively, on the basis of the number of employes estimated by the Department of Sanitation. The annual average death rate per thousand among employes for the month of June, 1911, was 12.61.

The annual average death rate per thousand in the Canal Zone and in the cities of Colon and Panama, including both employes and nonemployes, based upon the population as estimated by the Department of Sanitation, was 22.88. The annual average death rate per thousand among the same classes of population for the month of June, 1911, was 25.33.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes, was: For whites, 5.92; blacks, 3.25, giving a general average for disease of 3.91. For the same month during 1910 the annual average death rate per thousand from disease among whites, was 3.60; blacks, 10.93, giving a general average of 9.04; and for the same month during 1911, whites, 11.19; blacks, 8.82, giving a general average of 9.40.

Among employes during the month, deaths from the principal diseases were, as follows: Abscess of liver, amœbic, 1; dysentery, 2; hæmoglobinuric fever, 1; malaria fever, E. A., 2; pneumonia, 2; tuberculosis, 2; leaving six deaths from all other diseases, and 12 from external violence.

No cases of yellow fever, smallpox, or plague originated on, or were brought to the Isthmus during the month.

Respectfully,

GEO. W. GOETHALS, *Chairman.*

PERSONAL.

Mr. Maurice H. Thatcher, accompanied by Mrs. Thatcher, returned on the *Allianca*, on Tuesday, July 16, from a leave of absence spent in the United States.

Mr. J. A. Smith left on the *Panama*, on Monday, July 15, on his annual vacation, which he will spend in the United States.

Lieut. Frederick Mears, accompanied by Mrs. Mears, returned to the Isthmus on the *Allianca*, which docked at Cristobal on Tuesday, July 16.

Col. J. P. Fyffe has tendered his resignation as chief of the Canal Zone police to take effect at the expiration of his leave of absence. He left on Wednesday, July 17, on the steamer *Acapulco* of the Pacific Mail Steamship Company on a trip to Central America, at the conclusion of which, he will return to the United States. Capt. Charles W. Barber, formerly assistant chief of police, has been appointed to the position of chief.

Mr. L. K. Rourke of Boston, Mass., formerly assistant division engineer in the Central Division, arrived on the Isthmus on the *Cristobal*, Tuesday, July 9, on a sightseeing trip.

Mr. Frank A. Gause leaves on Thursday, July 18, on the steamship *Almirante* of the United Fruit Company, on his annual leave of absence, which he will spend in the United States.

Obituary.

Mr. Thomas Riley, employed by the Pacific Division at Pedro Miguel, died in Ancon Hospital on July 10. He was 25 years of age, single, and had been on the Isthmus a little over a year. He is survived by a brother, Michael Riley, living at Pedro Miguel.

Alman R. Proctor, who was employed on the Isthmus as a sanitary inspector up to the time of his resignation, effective on May 14, after eighty-four days' leave, died at his home in Rodney, Michigan, on June 6. Mr. Proctor was 40 years of age, married, and had been on the Isthmus five years. He is survived by his wife and four children.

Harry Morrise, a member of Company D, Tenth Infantry, Camp E. S. Otis, Las Cascadas, died at Ancon Hospital on Wednesday, July 10, as the result of a compound fracture of the skull inflicted in Panama on the evening of July 4. He was buried in Ancon cemetery.

Rainfall from July 1 to 13, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	.57	5	2.05
Balboa	.78	5	2.23
*Miraflores	.87	2	2.03
Pedro Miguel	.98	2	1.76
Rio Grande	.91	2	1.72
Central Section—			
Culebra	.85	2	2.19
*Camacho	.66	2	1.68
Empire	.57	2	1.33
Gamboa	.89	7	3.48
*Juan Mina	2.02	2	2.85
Alhajuela	2.34	1	4.92
*El Vigia	2.78	2	6.07
*Gorgona	.91	2	2.75
*Frijoles	1.08	3	3.07
Atlantic Section—			
Gatun	.77	1	1.84
*Brazos Brook	.92	1	3.25
Colon	1.49	1	2.79
Porto Bello	2.50	1	†6.93

*Standard: rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., July 12.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 24, 1912, (75th meridian time):

DATE.	Low	High	Low	High
	A.M.	A.M.	P.M.	P.M.
July 18	12.07	6.17	12.35	6.38
July 19	12.57	7.06	1.25	7.27
July 20	1.47	7.55	2.18	8.20
July 21	2.38	8.49	3.15	9.17
July 22	3.35	9.46	4.13	10.23
July 23	4.36	10.48	5.15	11.35
July 24	5.42	11.55	6.20	......

Misdirected Letters.

ANCON, C. Z., July 17, 1912.

The following insufficiently addressed letters originating in the United States and its possessions, have been received at the office of the Director of Posts, and may be secured upon request of the addressees.

Archer, A. A.
Barnes, Geo. G.
Bronson, J. H.
Clark, D. A.
Connor, A. P.
Conway, Fred
Fabian, Lionel J. (papers)
Furtado, J. P.
Generelly, Maurice
Gorman, Miss Mary A.
Green, Jas.
Hall, Robert
Hinselman, A.
Irosky, Paul
Knight, Miss Elsie
McCray, C. F.
Michaels, Miss Helen
Miller, F.
Michell, J. P.
Plummer, E.
Pullig, S. (2)
Roessner, E. A.
Schoenblum, H. B.
Stubner, Charles E.
Terry, Chas.
Williamson, L. H.
Wilson, R. A.
Wantz, Wm. E.

LETTERS UNCALLED FOR JULY 10, 1912.

Bartholomew, Wm.
Blissett, Jos.
Brennes, Miss Raymond de
Brown, Mrs. F. H.
Bush, A. F.
Conley, Mrs, Michael
Conners, Niel
Coulter, A. A.
Cruanas, Rafael
Gibbs, Webb L.
Grant, Mrs. Ward
Harvey, A. J.
Jolly, Adolphus H.
Kennett, Mrs. Lam
Kolantrios, Denis
Markham, C. W.
Ranson, Manfred
Sanders, Mrs. May
Sanders, J. T.
Smith, Claud B.
Stub, John
Tillen, Horace
Whitaker, Cole
Wilson, Miss Alice

Married.

TAYLOR-NOONAN—On June 30, in St. Luke's Chapel, Ancon, Lillian Noonan to William D. Taylor, the Rev. Carl H. Elliott officiating. Canal Zone residence, Pedro Miguel.

CLARK-URBAN—Grace Elmina Urban, to Dr Harry Ainsworth Clark, both of Boston, Mass., on Wednesday, July 10, in the Union Chapel of Cristobal, Rev. Carl H. Elliott, officiating. Isthmian residence, Colon Hospital grounds.

Commissary Prices.

Retail prices of cold storage provisions remain unchanged from last week.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

COROZAL.

The local handicap billiard tournament is drawing to a close, with Triblet, White, and Thompson tied for first place.

The high scores for tenpins during the past week are, as follows: Sims, 234; Souders, 211, 224; Beall, 214; in duckpins, Roberts, 102.

The Gatun bowling team will bowl the local team on Saturday, July 20, at Corozal.

CULEBRA.

The next moving picture show will be held on Thursday, July 18.

The boys have oranized a bowling tournament, and will play every Wednesday afternoon.

The high scores in bowling this week are, as follows: Silver, 102; Fox, 101; Case, 102; Mengel, 117; Geo. Holden, boys' department, 100.

A game of volleyball was played between the Chief Engineer's office team, and the Quartermaster's team on Friday evening, July 12, resulting in a victory for the former by a score of 3 to 2

The checker club will meet on Tuesday and Friday of each week.

EMPIRE.

In the local tenpin tournament the following are the results of games played during the past week: Progressives won two out of three games from the Democrats; Suffragettes won two out of three games from the Socialists; Socialists won two out of three games from the Independents. The standing to date of the teams, follows:

TEAM.	Won.	Lost.	P. C.
Suffragettes	6	3	.667
Independents	7	5	.583
Democrats	5	4	.556
Socialists	6	6	.500
Progressives	3	9	.250

A local basketball tournament has been organized. All wishing to play please hand their names to Mr. Russell.

GORGONA.

The regular gymnasium classes on Monday and Thursday nights are followed by the men playing recreative games affording diversion after the day of labor. The men are taking great interest in these games.

There is a special gymnasium class for night employes, on Wednesdays, from 2 to 3 p. m.

The "Car Knockers" bowled the "Machinists" on Tuesday evening, July 9. Scores: "Car Knockers"—652, 763, 613; "Machinists"—710, 795, 700.

Corozal played Gorgona on the local alleys Saturday evening, July 13. Scores: Corozal—710, 781, 799; Gorgona—829, 816, 659.

Gatun played Gorgona on the Gorgona alleys on Saturday evening, July 13. Scores: Gatun—744, 804, 761; Gorgona—765, 760, 645.

GATUN.

Gatun took two out of three games in the tenpin match at Gorgona on Saturday night, July 13.

A chess match between Culebra and Gatun occurred at the clubhouse on Saturday, July 13. Gatun took seven out of ten games, Culebra winning the other three. Score:

Gatun.	Won.	Lost.	Culebra.	Won.	Lost.
Chatfield	2	0	Dubois	1	1
Stewart	2	1	Newman	1	1
Gartrell	1	0	Vogel	1	1
Kallock	1	0	Minner	0	2
Shropshire	1	1	Warner	0	2
Feige	0	1			

A series of games will be arranged between DePoorter of Gatun and Pierson of Empire who are tied for the greatest number of games won in the recent pool tournament. The games will be played at Corozal, Empire, Gatun, and Cristobal.

The Camp Elliott team will bowl duckpins at Gatun, Friday, July 19, and the Gorgona team will bowl tenpins Saturday, July 20.

A basketball game was played between I. C. C. employes and McClintic-Marshall men on Friday evening, the former winning by a score of 20 to 4.

A class in Spanish, for beginners, was started on Wednesday evening, July 17.

Mr. M. L. Meyer has taken the place of Mr. John H. Shadrick as office assistant.

CRISTOBAL.

On Wednesday evening, July 10, Mr. F. L. Bernsee won 40 out of 46 games at simultaneous checkers.

A "smoker" was given on Friday night, July 12, with an attendance of over 300. Mr. Putnam, who left for the United States on the 15th, was given a "Round Robin" memorial signed by 100 persons, Rev. Carl H. Elliott making the presentation speech. A purse of $100, made up by members of the Cristobal clubhouse, was presented by Judge Thomas E. Brown, president of the local council. The program follows: Music by the I. C. C. orchestra; Cristobal male quartet; Messrs. Cogan and Evans in a singing and dialogue act; Orient minstrels of Colon in songs and dances; broadsword contest between Messrs. MacSparren and Fleming; music by orchestra; buck and wing dance by Orient minstrels; wrestling bouts between Messrs. Greening and Andrews; and Whittles and Huber; illuminated club swinging by Mr. Kramer of Culebra; cake walk by the "Cake walk kids" of the Orient minstrels; Cristobal male quartet; orchestra selection. Refreshments, consisting of cake, punch, peanuts, and cigars, were served.

A large silver loving cup was presented to the Cristobal team winning the trophy in the pentathlon meet at Empire on February 22, 1912. Two handsome shields were also presented to the bowling teams winning the Thanksgiving Day, 1911, and New Year's Day, 1912, Isthmian tournaments.

OFFICIAL CIRCULARS.

Telephone Conversations Limited.

CULEBRA, C. Z., July 12, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

The general superintendent of the Panama railroad invites attention to the fact that, in order to handle increasing business without delay, it will be necessary to limit conversations over telephone lines to five minutes, except for such few lines as might be excepted from this rule and be given unlimited service. It is desirable to confine this unlimited service to 'phones of the heads of departments and divisions and to chief clerks of departments and divisions. If there are any circumstances which, in your opinion, render it necessary to extend unlimited service to other 'phones in your department or division, please advise me at once.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Daily Reports of Work Performed.

CULEBRA, C. Z., July 8, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

Instances have been reported of the failure of foremen and similar employes to report accurately on their daily reports the amount of work performed. It is important that this information should be correct, and any carelessness of inaccuracies cannot be permitted. Please advise all concerned that any employe guilty of submitting misleading or incorrect reports of work will be subject to dismissal therefor.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Conventional Signs, U. S. Geographic Board.

CULEBRA, C. Z., July 10, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

The conventional signs recently recommended by the United States Geographic Board, and adopted, will hereafter be followed by the Isthmian Canal Commission and Panama Railroad Company in the preparation of maps. Copies will be furnished upon application to this office.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Chief of the Division of Police and Prisons.

ANCON, C. Z., July 10, 1912.

TO ALL CONCERNED:

Effective this date, Capt. C. W. Barber, assistant chief of the Division of Police and Prisons of the Department of Civil Administration, is appointed chief of the Division of Police and Prisons, vice Mr. J. P. Fyffe, resigned.

(Sgd.) H. H. ROUSSEAU,
Acting Head, Department of Civil Administration.

Approved: (Sgd.) GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting General Superintendent, P. R. R.

PANAMA RAILROAD COMPANY,
OFFICE OF PRESIDENT,
CULEBRA, C. Z., July 15, 1912.

TO ALL CONCERNED:

Effective July 16, 1912, Lieut. F. Mears will act as general superintendent during the absence of Mr. J. A. Smith, on leave.

GEO. W. GOETHALS, *President.*

Band Concert.

A band concert will be given by the Isthmian Canal Commission Band at Empire, C. Z., Sunday, July 21, 1912, at 6 p. m. The program follows:

1. March—*Niebelungen* .... Wagner
2. Selection—*The Prince of Pilsen* (By request) ...... Luders
3. Intermezzo—*After Sunset* .... Pryor
4. Overture—*Hungarian Lustspiel* .... Keler Bela
5. Tango—*El Mimito* .... Villanueva
6. *Ballet music from Faust* .... Gounod
7. Flower song—*Hearts and Flowers* .... Tobani
8. Medley selection—*Remick's Late Hits* ..... Lampe
9. March—*Lance and Shield* .... Laurendeau

CHAS. E. JENNINGS, *Musical Director.*

The next concert will be given at Hotel Tivoli, Ancon, July 28, at 8 p. m.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; or the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Colon	P. R. R.	Monday	July	15
Advance	P. R. R.	Monday	July	22
Panama	P. R. R.	Saturday	July	27
Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21
Allianca	P.R.R.	Tuesday	Aug.	27
Colon	P. R. R.	Tuesday	Sept.	3

CRISTOBAL TO NEW YORK.

Allianca	P. R. R.	Sunday	July	21
Colon	P. R. R.	Sunday	July	28
Advance	P. R. R.	Saturday	Aug.	3
Panama	P. R. R.	Friday	Aug.	9
Allianca	P. R. R.	Thursday	Aug.	15
Colon	P. R. R.	Wednesday	Aug.	21
Advance	P.R.R.	Tuesday	Aug.	27
Panama	P. R. R.	Tuesday	Sept.	3
Allianca	P. R. R.	Sunday	Sept.	8

NEW YORK TO COLON.

Santa Marta	U. F. C.	Wednesday	July	10
Prinz August Wilhelm	H.-A.	Saturday	July	13
Metapan	U. F. C.	Wednesday	July	17
Prinz Sigismund	H.-A.	Saturday	July	20
Tivives	U. F. C.	Saturday	July	20
Danube	R. M.	Saturday	July	20
Zacapa	U. F. C.	Wednesday	July	24
Prinz Joachim	H.-A.	Saturday	July	27
Almirante	U. F. C.	Wednesday	July	31
Carrillo	U. F. C.	Saturday	Aug.	3
Prinz Eitel Friedrich	H.-A.	Saturday	Aug.	3
Clyde	R. M.	Saturday	Aug.	3
Santa Marta	U. F. C.	Wednesday	Aug.	7

COLON TO NEW YORK.

Almirante	U. F. C.	Thursday	July	18
Prinz Eitel Friedrich	H.-A.	Monday	July	22
Carrillo	U. F. C.	Tuesday	July	23
Clyde	R. M.	Tuesday	July	23
Prinz August Wilhelm	H.-A.	Monday	July	29
Santa Marta	U. F. C.	Thursday	July	25
Turrialba	U. F. C.	Tuesday	July	30
Metapan	U. F. C.	Thursday	Aug	1
Prinz Sigismund	H.-A.	Monday	Aug.	5
Oruba	R. M.	Tuesday	Aug.	6
Tivives	U. F. C.	Tuesday	Aug.	6
Zacapa	U. F. C.	Thursday	Aug.	8
Prinz Joachim	H.-A.	Monday	Aug.	12

NEW ORLEANS TO COLON.

Parismina	U. F. C.	Saturday	July	20
Abangarez	U. F. C.	Saturday	July	27
Atenas	U. F. C.	Saturday	Aug.	3
Orleanian	U. F. C.	Wednesday	Aug.	7
Parismina	U. F. C.	Saturday	Aug.	10

COLON TO NEW ORLEANS.

Abangarez	U. F. C.	Thursday	July	18
Atenas	U. F. C.	Thursday	July	25
Orleanian	U. F. C.	Thursday	July	25
Parismina	U. F. C.	Thursday	Aug.	1

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, July 13, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia	Alhajuela	Gamboa	Gatun Lake
Sun., July 7	126.3	92.8	45.0	32.4
Mon., July 8	126.8	93.2	45.3	32.2
Tues., July 9	126.5	93.0	45.3	32.0
Wed., July 10	126.2	92.7	44.8	31.7
Thurs. July 11	126.0	92.5	44.6	31.5
Fri., July 12	126.2	92.7	44.8	31.3
Sat., July 13	126.4	93.0	45.0	31.0
Height of low water to the nearest foot	125.0	91.0	44.0	

Sale of Public Buildings in Las Cascadas—Bas Obispo District.

OFFICE OF THE CHIEF QUARTERMASTER,
CULEBRA, C. Z., July 11, 1912.

Sealed proposals will be received at this office until 3 p. m., Monday, July 22, 1912, and then opened, for the purchase of any or all of five buildings located in the Las Cascadas-Bas Obispo district. List of buildings and full information will be furnished upon application to any district quartermaster, or to this office. Proposals must be accompanied by five percentum (5%) of amount bid. Envelopes containing proposals should be endorsed "Proposal for purchase of buildings," and addressed to Col. C. A. DEVOL, Chief Quartermaster, Culebra, C. Z.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JULY 24, 1912. No. 48

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Wharf Improvements at Balboa.

The framework for six of the eight new cranes to be erected on the Panama railroad wharf at Balboa has been carried to full height, 62 feet above the tops of the supporting rails. One of the cranes is complete, except for portions of the electrical wiring. Its 78-foot boom projects about 40 feet beyond the edge of the wharf, in horizontal position, and the crane will be capable of lifting 4 tons in a load, and carrying it up and along the boom at the rate of 600 feet a minute. The crane is to be capable of moving along the face of the dock at the rate of 120 feet a minute. It weighs 60 tons, and is equipped with one 25-horsepower, and two 115-horsepower, 220-volt, 25-cycle alternating current motors. Those yet to be completed will be identical in construction with the first.

In connection with the installation of the new cranes and the construction of trackway to carry them along the face of the wharf, the outer side of the wharf is being converted from wooden to concrete structure. For a depth of about 20 feet from the outer edge, the floor is being torn up, and after the girders have been reinforced with additional plates, a heavy reinforced concrete floor, with embedded track, will be laid, in place of timber. The work also involves removing a portion of the roof over the wharf, to give room for the new and larger cranes.

Transfer of the Tug "Phœnix" to New York.

The tug *Phoenix*, which is equipped with fire-fighting apparatus, and has been in the service of the Panama Railroad Company at Colon and Cristobal for several years, has been ordered transferred to New York City, where it will be used in handling lighters, and shifting and docking Panama railroad vessels. Before starting on its voyage, it will be stripped of its fire-fighting apparatus, and thoroughly inspected and overhauled. The apparatus will be placed on the tug *Porto Bello* of the Atlantic Division fleet. The *Phoenix* was built in 1905 at Tottenville, New Jersey, and christened the *W. J. Dailey*. It has a wooden hull, is of 161 tons net register, 112 feet in length, 24 feet in breadth, and 12 feet in depth. It was purchased by the Panama Railroad Company in 1906, and came to the Isthmus under its own steam, where it was renamed the *Cristobal*. When the *Tremont* was acquired by the Canal Commission, it was decided to name the vessel the *Cristobal*, and for that reason the name of the tug was changed to *Phoenix*.

Dredge to be Transferred Across Isthmus.

Pipeline suction dredge *No. 85*, which has been working on the lake side of Gatun Dam, is to be dismantled and hauled by rail to the Pacific side of the Isthmus, where it will be rebuilt and used in excavating for the inner harbor at Balboa. The work of removing the machinery was begun on July 18. When the machinery has been taken off, the hull will be stripped of the superstructure and knocked down for shipping. Similar transfer from the Pacific side to the Atlantic side was made in the early part of 1910, of the pipeline suction dredge *Sandpiper*, which is practically identical in construction with *No. 85*.

Dredge *No. 85* has been working on the south side of Gatun Dam since April, 1910, when it was moved through the West Diversion just before closing same permanently, from the north side of the Dam. It was towed out to sea and along the coast to the mouth of the Chagres River, about eight miles, thence eight miles up the Chagres to a point beyond the site of the present spillway in Gatun Dam. It has supplied a great part of the hydraulic fill for both wings of Gatun Dam, and has for the past six-months been engaged in pumping a supporting fill along the south toe of the west wing, near its junction with the hills.

Precautions Against Plague.

On the Atlantic side of the Isthmus, bubonic plague exists in Venezuela and the islands of Trinidad, Grenada, Cuba, and Porto Rico. Colon is in communication with these places by six lines of steamers. Vessels calling at Colon are not allowed to go to the wharf in any of the plague ports, except La Guayra, Venezuela, where a special United States health representative keeps the vessels under the strictest supervision while in port. Vessels are not allowed to take cargo at plague ports, except cigars or cigarettes; passengers are allowed, but the baggage of steerage passengers must be disinfected and certified by the United States health representative at port of departure. Upon arrival at Colon all passengers from plague ports are detained in the quarantine station to complete seven days from the time the vessel left the infected port. If there is no sickness on board and the regulations at infected ports have been strictly complied with the vessel is not detained. Jamaica forbids ships calling there to accept passengers from plague-infected ports and this affords the Isthmus some temporary protection as the same vessels usually call at Colon, but Jamaica relaxes its restrictions much sooner after the last case of plague is reported than the Zone authorities, who continue to enforce the same regulations for a long time after the last reported case of human plague, as the disease may continue to be present among the rats.

Proposals for Mail Service via Panama Route.

The Post-Office Department is advertising for proposals for ocean mail service between designated cities on the Atlantic and Pacific coasts of the United States and the Isthmus of Panama. Contracts will be made for ten years, the service to begin not later than January 1, 1915. Vessels of the second and third classes will be employed. Following is a schedule of routes for vessels of the second class:

New York to Colon, biweekly, calling at Key West; time, New York to Colon, 6½ days.

New Orleans to Colon, biweekly; time to Colon, four days.

San Francisco to Panama, weekly, calling at San Pedro and San Diego, at election of the Post-Office Department; time, San Francisco to Panama, 10 days.

The schedule for vessels of the third class, follows:

Boston to Colon, once every 28 days, calling at Charleston and Brunswick, at election of Department; time, Philadelphia to Colon, 7½ days.

Baltimore to Colon, once every 28 days, calling at Norfolk and Charleston, at election of Department; time, Baltimore to Colon, 7½ days;.

Seattle to Panama, about twice every month, 26 trips a year, calling at San Francisco, San Pedro, and San Diego, at election of Department; time, Seattle to Panama, 16 days.

Portland to Panama, once every 28 days, calling at San Francisco, San Pedro, and San Diego, at election of Department; time, Portland to Panama, 16 days.

The Postmaster General reserves the right to require the steamers on each route, whenever they may continue their voyage to a port at the opposite end of the Panama Canal, to carry any portion of their mails to such port without additional compensation. Bids will be received until 4.30 p. m., October 15, 1912.

Assembling Gates for Spillway Dam.

The work of assembling the gates for Gatun Spillway dam is in progress in the erecting yard in the abandoned borrow pit near the machine shops, east of Gatun Locks. The contract for these gates, with the McClintic-Marshall Construction Company, covers the complete assembling, riveting, testing, and painting at the erection yard. After completion, the Canal Commission will haul them to the Spillway and put them in position with two locomotive cranes.

Each gate is 47 feet 4 inches wide, 19 feet high, and 4 feet 6½ inches thick. The general type of construction is similar to the lock gates, except only the upstream side is

NOTES OF PROGRESS.

(*Continued.*)

sheathed and made watertight. Each gate contains four horizontal girders and will weigh completed about 43 tons. The eight gates for Miraflores Locks are exactly alike and are covered by the same contract. Nearly all material for these is received and assembling will be started in about six weeks.

Postal Savings Bank Transactions.

A statement of Canal Zone postal savings bank transactions at Canal Zone post-offices for the period of June 3 to June 29, follows:

Name of Office.	Postal Savings Certificates Issued.	Postal Savings Certificates Paid.
Ancon	$5,744.00	$4,243.00
Balboa	11,089.00	5,374.00
Bas Obispo	470.00	315.00
Corozal	8,661.00	5,569.00
Cristobal	6,109.00	4,683.00
Culebra	8,805.00	4,462.00
Empire	4,627.00	2,492.00
Gatun	10,376.00	6,423.00
Gorgona	15,224.00	11,973.00
Las Cascadas	5,945.00	4,385.00
Matachin	677.00	321.00
Miraflores	7,153.00	2,183.00
Paraiso	4,316.00	3,149.00
Pedro Miguel	15,574.00	11,223.00
Cristobal, Station A	271.00	142.00
Cristobal, Station B	800.00	405.00
Total	$105,841 00	$67,342.00

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 90 per cent completed, 203,295 cubic yards, out of a total of 225,000, having been placed at the close of work on July 20. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
July 15	58	3 30	1
July 16	64	3.00	1
July 17	66	5.00	1
July 18	12	.30	1
July 19	76	6.30	1
July 20	80	7.15	1
Total	356	25.45	1
Previously reported	202,939		
Grand total	203,295		

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the two weeks ending July 20:

Date.	Hours worked.	Cubic Yards.
July 8	7.45	2,016
July 9	7.00	2,304
July 10	8.10	3,001
July 11	8.15	2,478
July 12	7.25	2,307
July 13	7.50	2,610
Total	46.25	14,716
July 15	6.45	2,385
July 16	3.45	1,893
July 17	7.45	2,636
July 18	7.00	2,444
July 19	3.40	925
July 20	7.20	2,627
Total	36.15	12,910

New Borrow Pit at Gatun Dam.

An area of slightly over 14 acres of land, lying to the north of the Spillway hotel, is to be devoted to a borrow pit for supplying clay for both wings of the Gatun Dam. After the toes have been brought to full height on either side of the hydraulic fill, they are to be brought together by filling inward on the top of the hydraulic material. When the embankments have come within twenty-five feet of each other, the remaining fill is to be made with selected clay. The new borrow pit will supply clay for this purpose, and for blanketing the lake side of the hills embraced by the dam at its western extremity. Steam-shovel No. 134 has begun excavation in the new pit, and shovel No. 117 will shortly be added.

Postal Business and Canal Zone Revenues.

The total amount of money orders issued in the Canal Zone during the month of June was $345,598.43, of which $279,362.95 was payable in the United States, $65,555.28 in the Canal Zone, $644.70 in Martinique, and $35.50 in Costa Rica. The number of orders issued was 17,146, and the average value was $20.15. Money order fees amounted to $1,657.96, and the amount paid and repaid was $86,638.99. Postal sales amounted to $7,374, and newspaper postage to $14.79.

Revenue collections during the month of June were, as follows: Bicycle and chauffeur licenses, $53; motor vehicle licenses, $1,026; steamboat inspection, $70; and taxes, licenses, etc., $35,504.35; total, $36,653.35.

CONCRETE WORK IN THE LOCKS.

Over 89 per cent of the concrete for the locks is in place, the amount at the close of work on July 20 being 3,842,543 cubic yards, out of a total of approximately 4,302,563. A total of 19,294½ cubic yards of concrete was laid in the locks during the week ending July 20.

GATUN LOCKS.

Over 94 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on July 20 being 1,885,832 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day of the week ending July 20, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
July 15	382	6.28	2					398
July 16	464	7.54	2					470
July 17	230	3.38	2					230
July 18	338	5.44	2					338
July 19	392	6.02	2					392
July 20	268	4.40	2					277½
Portable mixer				31½				
Total	2,074	34.26	2	*31½				2,105½
Previously reported								1,883,726½
Grand total								1,885,832

*The 31½ cubic yards shown for the portable mixer are reinforced concrete, and were placed on the following days: July 15th, 16; July 16th, 6; July 20th, 9½.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 97 per cent completed, 866,458 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on July 20. The record for each of the working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
July 15	220	5.50	1	337	30.50	6		557
July 16	252	6.25	1	323	29.00	5		575
July 17	136	3.50	1	281	23.50	4		417
July 18	130	3.25	1	322	30.00	4		452
July 19	292	7.25	1	252	20.75	5		544
July 20	144	3.50	1	307	30.25	5		451
Total	1,174	29.25	1	1,822	164.00	4.83		2,996
Previously reported							4,493	863,462
Grand total							4,493	866,458

MIRAFLORES LOCKS.

Over 77 per cent of the concrete for the system of two twin locks at Miraflores was in place July 20, the total amount on that date being 1,090,253 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each working day last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
July 14				134	4.00	1					131
July 15	718	28.92	7	1,152	16.00	3	364	40.50	6		2,234
July 16	940	28.75	7	1,218	17.75	3	383	40.50	6		2,544
July 17	886	38.42	7	1,290	18.75	3	334	36.50	6		2,510
July 18	1,044	38.33	7	1,082	15.40	3	359	40.50	6		2,485
July 19	760	31.25	7	1,242	15.50	2	324	34.50	5		2,326
July 20	754	29.83	7	1,000	16 50	2	298	35.00	5		2,052
Total	5,102	195.50	7	7,118	103.90	2.43	2,062	227.50	5.67		14,282
Previously reported										3,693	1,075,971
Grand total										3,693	1,090,253

STEAMSHOVEL RECORDS.

Work of Central Division Shovels in June.

During the month of June the total amount of material excavated in the Central Division was 1,357,204 cubic yards, of which 297,237 cubic yards were classified as earth, and 1,059,967 cubic yards as rock. The total—1,357,204 cubic yards—was removed by steamshovels.

The high record for the month was made by shovel No. 207, working 24 days in the Culebra district, which excavated 68,643 cubic yards of rock and earth.

The second best record for the month was made by shovel No. 212, working 24 days in the Culebra district, which excavated 54,520 cubic yards of rock.

The best record for a shovel of the 70-ton class was made by shovel No. 109, working 25 days in the Culebra district, which excavated 40,925 cubic yards of earth.

Shovel No. 207, working in the Culebra district, made a high record for one day by excavating 3,819 cubic yards of rock on June 6.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best record for the month and for one day are shown below:

BEST RECORDS FOR THE MONTH.

CULEBRA DISTRICT.

Shovel No.	Cubic Yards. Earth.	Rock.	Total.	No. of days at work.
207	28,643	40,000	68,643	24
212	....	54,520	54,520	24
203	....	45,777	45,777	25
EMPIRE DISTRICT.				
124	39,392	....	39,392	25
228	....	38,172	38,172	26
229	....	34,380	31,380	26
PEDRO MIGUEL.				
231	....	45,360	45,360	25½

BEST RECORD FOR ONE DAY.

Shovel.	Location.	Date.	Character of material excavated.	Cubic yards.
228	Empire	June 1	Rock	2.204
229	Empire	June 7	Rock	2,185
216	Empire	June 1	Rock	2,112
207	Culebra	June 6	Rock	3,819
207	Culebra	June 11	Rock	3,610
207	Culebra	June 28	Rock	3,572
207	Culebra	June 29	Rock	3,287
231	Pedro Miguel	June 15	Rock	2,419

Quarterly Meeting of the Isthmian Sunday School Association.

The quarterly meeting of the Isthmian Sunday School Association was held in the Commission chapel at Gorgona on Sunday, July 14, at 2.15 o'clock. The attendance was the largest of any quarterly meeting for more than three years. Mr. E. A. Putnam, who has served as secretary for the past year, spoke on "Sunday school work as I have seen it on the Isthmus," and Mr. W. N. Windes of Gatun read a paper on "The essential qualification of a teacher." The semiannual election of officers resulted, as follows: President, Rev. A. A. Nellis, Empire (reelected); vice-president, W. H. Kromer, Cristobal; secretary, W. N. Windes, Gatun; treasurer, J. B. March, Gorgona (reelected.)

The steamship *Portland* of the California-Atlantic Steamship Company arrived at Balboa from San Francisco on July 22, with 3,000 tons of cargo. This is the first trip of the *Portland* to Balboa, but it will ply regularly, hereafter, between the Isthmus and north Pacific ports. The vessel was recently converted from coal to oil burning.

Invitation to American Public Health Association.

The Chief Sanitary Officer will extend, in the name of the Isthmian Canal Commission, an invitation to the American Public Health Association to hold its annual meeting for 1913 in the Canal Zone. The invitation is to be presented at the next meeting, to be held in Washington next September. The association is the leading international sanitary organization in the Western Hemisphere.

PERSONAL.

Mr. Joseph Bucklin Bishop, accompanied by Mrs. Bishop, is a passenger on the *Ancon*, scheduled to arrive at Cristobal on Friday, July 26.

Red Cross Finances.

The financial statement of the Canal Zone chapter, American National Red Cross, for the month of June, 1912 is, as follows:

RECEIPTS.

June 1.	On hand	$2,435.08	
June 5.	Interest on money in bank for April and May.	8.28	
June 30.	Membership dues received	2.00	
	Total receipts		$2,445 36

DISBURSEMENTS.

June 15.	Relief of family of American employe drowned near Chepo	$100.00	
June 18.	Relief of American from Honduras stranded in Colon	20 00	
June 26.	Relief of destitute American, deported from Colon.	10 00	
June 26.	Purchase of hotel coupon book to be used in furnishing meals for destitute persons while awaiting action of the Red Cross	15.00	
	Total disbursements		$145.00
June 30.	Balance on hand		$2,300.36

JOHN L. PHILLIPS, *Treasurer.*

Approved:

C. A. DEVOL, *Chairman.*

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on July 31. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8 a. m., on July 31, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their ability properly to operate an automobile, and must have the automobile with them.

Costa Rican School Teachers on Visit to Canal.

Mr. Juan Francisco Echeverria, C. E., of the public works of Costa Rica, accompanied by a party of Costa Rican school teachers, arrived on the *Prinz Eitel Friedrich* on Monday, July 15, on a tour of inspection of the Canal works.

Tenth Infantryman Found Dead near Bas Obispo.

Luther McCullah, a private in the Tenth Infantry, Camp E. S. Otis, belonging to the mounted detachment, was found dead on the Mandingo River bridge on the Gorgona road, not far from Bas Obispo, on the morning of Tuesday, July 16, with two bullet wounds, one in the head, and the other in his body. The discovery was made by James Stewart, an elderly colored man, living near one end of the bridge. A coroner's jury was empaneled, but has not yet concluded its findings.

Pacific Masonic Club Election.

At the regular meeting of the Pacific Masonic Club, held at Ancon on Saturday, July 20, the following officers were elected for the ensuing term: President, Emil J. Rall; first vice-president, E. E. Price; second vice-president, John Mergendaller; secretary-treasurer, David R. Wolverton.

Fatal Accident at Pedro Miguel Locks.

Lephus Erik Skeel-Gjedsted, an employe of the McClintic-Marshall Company, was killed on July 16 in the west chamber of the Pedro Miguel locks by a falling manhole ring weighing 200 pounds. He was born in Copenhagen, Denmark, in 1883, and is survived by his father who lives at Verteminde, Denmark.

Killed in Attempting to Board Engine.

Fitzgerald Harper, a Barbadian, check No. 15550, employed in the transportation department, fell under the wheels and was killed, on Tuesday, July 9, while attempting to board engine No. 658 in the Cristobal railroad yard.

Missing Men.

Any one who can furnish information respecting Percival Ranson Curtis, Englishman, who arrived at Colon in 1911, is requested to communicate with the British Consul, Colon.

Any one having information regarding the whereabouts of Mr. Albert W. Stevens, who is supposed to have come to the Isthmus from Hackensack, New Jersey, is requested to communicate with the Chief Sanitary Officer, Ancon.

Band Concert.

A band concert will be given by the Isthmian Canal Commission Band at Hotel Tivoli, Ancon, C. Z., Sunday, July 28, 1912, at 8. p. m. The program follows:

1. March—*Lance and Shield*	Laurendeau
2. Selection—*Dr. De Luxe*	Hoschna
3. Reverie—*Thoughts of Home*	Jennings
4. Overture—*Poet and Peasant*	von Suppe
5. Tango—*El Mimito*	Villanueva
6. Selection—*The Fortune Teller*	Herbert
7. Ballet Music from Faust	Gounod
8. Medley Selection—*Remick's Late Hits*	Lampe
9. March—*I Want to Be In Dixie*	Berlin & Snyder

CHARLES E. JENNINGS, *Musical Director.*

The next concert will be given at Gorgona, Augus 4, at 6 p. m.

Family Quarters.

Applications for married quarters on file on June 30, 1912, were, as follows:

District.	List No 1.	List No. 2
Ancon	2 (1)	63 (18)
Ancon Hospital	....	1
Balboa	....	40 (8)
Bas Obispo	....	29 (7)
Corozal	....	62 (19)
Cristobal	....	126 (11)
Culebra	1	47 (1)
Empire	....	57 (25)
Gatun	1	101 (12)
Gorgona	....	73 (32)
Las Cascadas	....	33 (6)
Pedro Miguel	1 (1)	49 (9)
Porto Bello	....	7 (5)
Toro Point	1	3
Total	6 (2)	691 (153)

NOTE—The figures in parentheses show the number of applicants already occupying regular or nonhousekeeping family quarters at stations other than those at which applications are filed.

CANAL ZONE CENSUS.

Enumeration Completed on March 31 and Results have been Compiled.

The work of enumeration in connection with the Canal Zone census was begun on February 1, 1912, and concluded on March 31. It was in charge of the Department of Civil Administration, and was under the immediate direction of Mr. Edward W. Koch, an expert from the Bureau of the Census at Washington, and Mr. C. L. Luedtke, assistant chief clerk of the Department of Civil Administration. Their report, with accompanying tables, has been approved by the Chairman and ordered printed in pamphlet form.

The territorial scope of the census comprised, in addition to the Canal Zone proper, the Canal Commission settlements at Porto Bello, Nombre de Dios, Colon beach, including Colon Hospital, the Taboga sanitarium, and the floating equipment at Punta Chamé. Although not included in the Canal Zone figures, the enumeration took into account all employes of the Canal Commission and Panama railroad who resided in the cities of Panama and Colon. The enumeration of the United States forces at Camp E. S. Otis, and Camp Elliott, was made by persons who were appointed as special enumerators for the purpose. The enumeration of the inmates of the Canal Zone penitentiary and prison stockade was performed by an officer specially designated. Thirty enumerators were employed on the Zone census proper.

The total number of persons enumerated was 71,682, of whom 8,661 were employes of the Canal Commission and the Panama Railroad Company, and 211 of contractors, who, while employed in the Zone, resided in Panama and Colon, which placed the total population of the Canal Zone, embracing the territorial scope above described, at 62,810. Of that number, 19,413 were white; 31,525 were black; 10,323 were mixed; 521 were yellow, consisting of 516 Chinese and five Japanese; 378 were Hindoos, and two were Filipinos. There were also 648 persons reported as Indians, nearly all of whom, however, could have been included in the "mixed" classification, known under the Spanish ethnographic term of mestizo, a mixture of some European racial stock (in this case Spanish) with the aborigines, or native Indian race. The above figures, however, do not represent the number of persons of that race, as many were reported by the enumerators as mixed, which, according to the instructions,

TABLE 1—POPULATION OF THE CANAL ZONE BY TOWNS AND VILLAGES.

Towns.	Total inhabitants.	White.			Black.			Mixed.			Indian			Yellow.			Hindoo.			Filipino
		Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.	Male.
Ancon	1,674	533	362	895	538	186	724	41	7	48				6		6				1
Balboa	1,146	361	111	472	497	34	531	100	27	127				10	2	12	4		4	
Bas Matachin	613	8	3	11	303	176	479	80	33	113	4	4	8	2		2				
Bas Obispo	472	174	91	265	136	44	180	15	8	23				4		4				
Bohio	279	3	7	10	187	64	251	5	3	8				7	3	10				
Caimeto	259				130	33	163	51	44	95	1		1							
Camp Elliott	445	418	15	433	2	8	10	1	1	2										
Camp Otis	880	818	60	878		1	1													1
Cartagenita	243	2		2	158	61	219	8	8	16				6		6				
Corozal	1,035	596	106	702	198	20	218	89	18	107	1		1	6	1	7				
Cow Pens	497		1	1	261	143	404	37	41	78				14		14				
Cristobal	3,584	1,063	419	1,482	1,506	443	1,949	92	56	148				5		5				
Cruces	169	1		1	65	67	132	19	17	36										
Cucaracha	358	23	5	28	160	80	240	42	44	86				4		4				
Culebra	2,032	622	317	939	682	209	891	101	69	170	1		1	28	2	30	1		1	
Diablo	52	27	22	49		1	1		2	2										
East Balboa	658	366	104	470	82	10	92	47	15	62				9		9	25		25	
Empire	7,152	1,103	654	1,757	2,469	1,232	3,701	839	730	1,569				93	8	101	24		24	
Enterprise	242	90	67	157	56	13	69	12	4	16										
Fox River	126	7	2	9	79	26	105	10	2	12										
Frijoles	96	4	6	10	37	6	43	27	14	41				2		2				
Gatun	8,887	2,512	383	2,895	4,196	1,203	5,399	346	184	530				59	1	60	3		3	
Golden Green	1,570	5	2	7	841	481	1,322	108	116	224				13	3	16	1		1	
Gorgona	3,444	1,030	419	1,449	950	419	1,369	300	285	585	1		1	33		33	7		7	
Haut Obispo	389	168	18	186	128	46	174	20	7	27				2		2				
Las Cascadas	1,190	396	190	586	342	193	535	30	25	55				14		14				
Las Sabanas	303	28	32	60	83	64	147	51	42	93		1	1	2		2				
Lirio	320				181	129	310	6	4	10										
Matachin	796	43	38	81	371	180	551	69	69	138				22	4	26				
Miraflores	1,230	656	29	685	302	39	341	108	36	144				7		7	53		53	
Monte Lirio	390	55	1	56	241	43	284	31	10	41				9		9				
Mount Hope	1,134	99	16	55	585	395	980	49	42	91				8		8				
New Frijoles	249	23	10	33	137	35	172	34	9	43				1		1				
Palo Seco	93	5	1	6	38	21	59	13	13	26				2		2				
Paraiso	2,339	490	172	662	876	269	1,145	319	190	509				21	2	23				
Pedro Miguel	2,278	723	155	878	826	243	1,069	216	85	301				17	3	20	9	1	10	
Rio Grande	1,277	450	42	492	356	185	541	120	102	222				22		22				
San Pablo	55	5		5	22	10	32	9	9	18										
Santa Cruz†	106				36	34	70	17	19	36										
Tabernilla	50	3	3	6	22	5	27	10	4	14				3		3				
Toro Point	598	167	16	183	363	15	378	31	6	37										
Islands—																				
Naos	420	48	5	53	76	1	77	50	7	57							233		233	
Culebra	24	5	2	7	9	1	10	7		7										
Floating equipment																				
Atlantic	246	108		108	126		126	12		12										
Pacific	202	41		41	23	1	24	132		132				5		5				
Rural—																				
Ancon administrative district	1,057	29	11	40	206	128	334	345	333	678				2		2	3		3	
Empire administrative district	4,821	532	139	671	1,567	573	2,140	1,163	831	1,994				7	1	8	3	5	8	
Gorgona administrative district	4,428	556	129	685	1,315	688	2,003	587	507	1,094	303	332	635	9	1	10	1		1	
Cristobal administrative district	1,371	51	10	61	663	263	926	207	141	348				31	5	36				
Total, Canal Zone	61,279	14,387	4,175	18,562	22,427	8,521	30,948	6,006	4,219	10,225	311	337	648	485	36	521	367	6	373	2
Colon beach	739	335	230	565	86	36	122	38	14	52										
Nombre de Dios	42				21	21	42													
Porto Bello	713	219	46	265	405	1	406	36	1	37							5		5	
Taboga	37	18	3	21	7		7	8	1	9										
Total, including Canal Zone proper	62,810	14,959	4,454	19,413	22,946	8,579	31,525	6,088	4,235	10,323	311	337	648	485	36	521	372	6	378	2
Colon	3,789*	163		163	3,076	97	3,173	410	35	445				6		6	2		2	
Panama	5,083*	482	5	487	3,628	99	3,727	838	30	868							1		1	
Grand total	71,682	15,604	4,459	20,063	29,650	8,775	38,425	7,336	4,300	11,636	311	337	648	491	36	527	375	6	381	2

*Employes of the Isthmian Canal Commission and Panama Railroad Company, working in the Canal Zone and residing in the cities of Panama and Colon, including 21 employes of the McClintic-Marshall Construction Company. †Ancon district.

was defined as including all persons of mixed blood, irrespective of the nature of the mixture. The last census of the Canal Zone, prior to this one, was taken as of June 23, 1908. The population of the Zone at that time was reported at 50,003, so in the interval since then there has been an apparent gain of 12,807 inhabitants.

Classified by citizenship, Great Britain leads in the present census, with 30,859; United States, second, with 11,850. The countries represented will be found in table No. 2. Of the 11,850 American citizens, 9,770 were born in the United States. By states, Pennsylvania, leads with 1,375; New York, second, with 1,372; Ohio, third, with 692; Illinois, fourth, with 453; Massachusetts, fifth, with 386; Indiana, sixth, with 382; Kentucky, seventh, with 369; Virginia, eighth, with 338.

TABLE II—TOTAL POPULATION OF THE CANAL ZONE DISTRIBUTED BY COUNTRY OF WHICH CITIZEN OR SUBJECT, AND SEX.

COUNTRY.	Aggregate.		
	Male.	Female.	Total.
Argentina	7	2	9
Austria-Hungary	36	2	38
Belgium	4	....	4
Bolivia	9	5	14
Bulgaria	1	....	1
Chile	27	5	32
China	471	45	516
Colombia	967	554	1,521
Costa Rica	53	24	77
Cuba	51	21	72
Denmark	35	21	56
Ecuador	39	4	43
France	2,263	497	2,760
Germany	61	14	75
Great Britain	22,393	8,466	30,859
Greece	1,285	6	1,291
Guatemala	3	4	7
Haiti	68	6	74
Holland	35	4	39
Honduras	5	1	6
Italy	800	12	812
Japan	4	1	5
Liberia	1	....	1
Mexico	67	5	72
Nicaragua	53	20	73
Norway	23	2	25
Panama	3,903	3,733	7,636
Paraguay	2	1	3
Peru	208	15	223
Portugal	113	6	119
Roumania	1	....	1
Russia	48	6	54
Salvador	9	2	11
Santo Domingo	2	....	2
Spain	3,809	496	4,305
Sweden	20	4	24
Switzerland	13	1	14
Turkey	36	6	42
United States	8,199	3,651	11,850
Venezuela	39	5	44
Total	45,163	17,647	62,810

The population not included in the towns was placed at 11,677, which, distributed by administrative districts was, as follows: Ancon, 1,057; Empire, 4,821; Gorgona, 4,428, and Cristobal, 1,371. These figures, however, included many of the more thickly settled localities and native settlements, but which, because of the lack of well-defined geographic limits, it was impossible to correctly classify. The population, outside of the settlements located in the territory contiguous to the Canal and railroad, was approximately 5,000. The total number of persons reported as having arrived in the Canal Zone, prior to February 26, 1904, which was the date of the ratification of the treaty with Panama, was 8,963.

Gatun, which includes the native settlement of New Gatun, is shown to be the largest Canal Zone settlement, with Empire a close second; Cristobal, third; Gorgona, fourth, and Paraiso, fifth.

The report shows that the total number of employes of the Canal Commission and the Panama railroad at the time of the enumeration was 41,174, of whom 32,513 resided in the Canal Zone, and 8,661 in Panama and Colon. The number employed by the Canal Commission was 33,241; by the Panama railroad 7,933. In comparing the number of employes enumerated—41,174—with the number of employes shown on the payrolls for February—49,830—it was found that the payrolls showed 8,656 more than were actually enumerated. That discrepancy, however, was not regarded as a real one, the difference in the main being accounted for, first, by deducting the names appearing on the payrolls more than once, caused by reason of transfers between gangs, divisions and departments, as well as the discharge and reemployment of many persons during the period covered by the roll, and, second, for the reason that there were found in the Zone 5,960 male nonemployes, 15 years of age, or over. This number was exclusive of the persons employed by the contractors and those stationed at Camp Otis and Camp Elliott. As the census period covered nearly two months, and it was impossible to enumerate all persons during the month of February, many persons, although employed on February 1, subsequently severed their connection as employes, and when found by the enumerators, were reported as nonemployes. On the other hand, many persons were enumerated as nonemployes, who, subsequent to February 1, became employes of the Commission or railroad, so that many persons were enumerated as nonemployes whose names nevertheless were included in the number of employes as shown by the payrolls. As an illustration, it may be cited the enumeration of the employes of the McClintic-Marshall Construction Company, who reported as having 1,012 men employed during the month of February, when it was only possible to enumerate 878 persons, a difference of about 13 per cent. An allowance should be made also, for those employes who did not come within the territorial scope of the census, namely, those who resided and were employed in the cities of Panama and Colon. This would include, for instance, practically all of the laborers upon the docks at Colon, and the American wharf and freight house and railroad yards at Panama. The number of persons so employed during February was placed by the Panama railroad at 1,000.

Owing to the fact that the scope of the census comprehended the enumeration of all employes working in the Zone, special methods had to be adopted for their enumeration, which in the Ancon and Cristobal districts involved the enumeration of the men while at work. This, however, afforded an opportunity for observing the constant change of the labor forces, which resulted in duplicating the names upon the timebooks and payrolls. To insure as accurate a count as it was possible to make under these conditions the enumerators secured access to the timebooks, and, in many instances, prepared lists therefrom, and then checked the employes enumerated. A large proportion was always found to be absent from various causes, necessitating personal search for those persons.

In the Atlantic Division at Gatun, it was possible to obviate to a large extent the field enumeration by having the enumeration cards partly filled out in the office from the payrolls in advance of the date set for the issuance of the pay certificates, which, by special direction of the division engineer, were issued from the office, instead of being distributed on the field. Thus, by detailing enumerators from other districts, it was possible to carry on the work of enumeration in conjunction with the issuance of pay certificates, and by this method, 4,200 laborers were enumerated during three afternoon periods. A similar method was adopted in the enumeration of the forces employed by the contractors. In the Pacific Division, also, the census cards were partly filled out in the time office, but, as the pay certificates had already been issued and the men paid, it was necessary to enumerate on the work. The enumeration of the American employes was made in quarters as far as possible, which was also the method followed in the enumeration of the silver employes in the Empire and Gorgona districts.

To obtain as far as possible the correct number of employes, there were secured from the various departments on the Isthmus, lists of all silver employes whose names appeared upon the February payrolls. The gold employes were checked against the timebooks and timerolls for the month of February. The result of this check demonstrated that it was impossible to arrive at what might be called an exact number of employes. The number shown by the weekly force report was, of course, less than the average employed during any one month, while the number of employes shown on the payrolls, on the other hand, was too high. With due regard, therefore, for the various methods adopted to secure accuracy in the number of employes, as well as for the other reasons offered in explanation of the difference, it is believed that the number of employes enumerated—41,174—with an allowance of 1,000 covering those employes who work and reside in the cities of Panama and Colon, or a total of 42,174, may be safely placed as the number of employes of the Canal Commission and the Panama Railroad on February 1, 1912.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the week ending July 13:

Median, July 7, from Liverpool, with 300 barrels carbolic acid, for stock.

Nicholas Cuneo, July 6, from Bridgeton, with 11,000 cases dynamite, for stock.

Prinz Joachim, July 7, from New York, with 21 cases safety fuse, 10 cases hardware, for stock.

Sixaola, July 7, from New York, with 10 cases varnish, 562 pieces channels, for stock; 55 cases machinery, 16 cases brass nuts, 181 cases castings, for superintendent of erection; 96 pieces steel channels, for Mechanical Division; 2,408 pieces steel bars, for Division of Fortifications.

Thelma, July 8, from St. Mary's, Ga., 1,085 pieces piling, for stock; 3,176 pieces lumber, for Mechanical Division.

Remembrance, July 7, from Newport News, with 124 tons blacksmith coal, for stock.

Bylands, July 8, from New York, with 105,896 bags cement, for Pacific Division.

Almirante, July 10, from New York, with 39 pieces steel plates, 7 bundles fittings, for superintendent of erection.

Cristobal, July 10, from New York, with 120,000 bags cement, 44 snubbing posts, 75 cases coil springs, for Pacific Division; 26 crates steel lathe, 348 packages crane parts, for Panama Railroad Company; 541 bundles conduit, for superintendent of erection; 145 pieces iron pipe, 10 cases hardware, for stock.

Abangarez, July 11, from New Orleans, with 100 cases soap, 26 pieces steamshovel castings, 2,754 bundles lumber, 2,538 pieces lumber, 92 pieces piling, for stock; 2,269 pieces lumber, for Mechanical Division.

Westlands, July 11, from New York, with 297 cases machinery, 205 packages rack castings, 185 packages valve material, for superintendent of erection; 358 bundles structural steel, 167 pieces steel girders, for Panama Railroad Company; 50 kegs nails, for stock.

Panama, July 10, from New York, with 675 pieces steel bars, 91 pieces car couplers, for Pacific Division; 106 cases castings, for superintendent of erection; 95 cases drugs and sundries, for Sanitary Department; 50 pigs tin, 28 cases rubber hose, 200 pigs lead, 201 bags tie plugs, for stock; and a miscellanous cargo, the whole consisting of 1,950 packages, weighing 175 tons.

OFFICIAL CIRCULARS.

Rules and Regulations Governing Leave of Absence.

CULEBRA, C. Z., July 3, 1912.

CIRCULAR NO. 132-L (Cross file also as 297-D.):

The following compilation of the rules and regulations governing the granting of leaves of absence to employes is published for the information and guidance of all concerned:

Service required to earn leave with pay—1. In computing the service of an employe which entitles him to leave with pay, the following time is not counted as such service:

(*a*) Suspensions.

(*b*) Leave of absence without pay.

(*c*) Absence on account of illness or injury due to the employe's own fault or misconduct, particularly alcoholism and venereal diseases.

(*d*) Absence on account of illness or injury not the fault of the employe, in excess of sixty days in twelve months.

Service for the required number of months, exclusive of the above deductions, must be rendered to entitle an employe to leave with pay.

2. An employe is entitled to no leave for service of less than six months.

3. For service of six months and less than ten months, a monthly employe is entitled to leave at the rate of 3½ days, and an hourly employe 2⅓ days for each full month's service upon discharge on account of reduction of force or resignation, but not when discharged for cause.

4. After serving 10 months on the monthly roll, an employe may, in the discretion of the head of the department or division in which he is employed, or of the Chairman and Chief Engineer, be granted leave for one year's service, viz: 42 days with pay, and, after 10 months on the hourly roll, an employe may be granted 28 days with pay. (When part of his service is on the monthly roll, and part on the hourly, Section 22 will govern.)

Accumulative leave—5. After an employe has completed 12 months' service (exclusive of deductions described in Section 1) without taking a leave with pay, additional leave may be earned at the rate of 3½ days for each month's service, in the case of monthly employes, and 2⅓ days for hourly employes, and will be granted in case of resignation or discharge on account of reduction of force, but not when discharged for cause; however, if the employe completes 10 months' service in the second year, he becomes entitled to leave for an additional full year's service, or a total of 84 days for monthly employes, and 56 days for hourly employes.

6. A monthly employe cannot accumulate more than 84 days with pay, nor an hourly employe more than 56 days.

7. When an employe who has accumulated leave for two years' service expects to take leave at about the end of the two years, he must enter on same within four months after leave for the second year becomes due. Otherwise, his service between the completion of the second year and the date he finally enters on leave will earn no leave.

Only leave which has become due on or after January 1, 1911, may be accumulated, in the case of monthly employes, and on or after November 1, 1910, in case of hourly employes.

Forfeiture of leave—8. Leave is not a vested right and may be forfeited, at the discretion of the head of the department or division, or of the Chairman and Chief Engineer, if an employe's services is terminated on account of unsatisfactory workmanship or flagrant misconduct; provided, however, that, after the employe has given proper notice that he intends to accumulate leave which has become due, such leave shall not thereafter be forfeited.

9. When an employe desires to accumulate leave which is due he should give written notice to the head of his department or division of his intention. The leave of monthly employes accumulates without such notice if the four months' period within which monthly employes may enter on leave has passed.

Time of taking leave—10. Monthly employes may enter on leave within four months after it becomes due, at the convenience of the head of the department or division. Exceptions to this rule may be made only by the Chairman and will be limited to cases of necessity.

11. Hourly employes may enter on leave at any time after it becomes due, subject to the approval of the head of the department or division.

12. Except at termination of employe's service, leave only becomes due him once a year, i. e., he must complete 10 months' service each year before leave becomes due.

Amount of leave which may be granted—13. At the termination of an employe's services he may be granted all leave due him under the preceding rules.

14. Not more than 42 days with pay may be granted any employe, except at termination of service. An employe having less than 42 days with pay due may, if desired, be granted extra days without pay to make a total leave of 42 days. Additional days without pay in excess of 42 days will be granted only in cases of necessity. Department and division heads will ascertain the facts in such cases and make recommendation to the Chairman accordingly.

15. The rule heretofore in force that leave remaining to an employe's credit to accumulate must be two weeks or a multiple of two weeks, is hereby abolished. An employe applying for leave will hereafter be granted all leave due him, provided it does not exceed 42 days. If it exceeds 42 days, any balance remaining will accumulate to his credit.

To whom leave with pay may be granted—16. Leave with pay may be granted to employes whose salaries are fixed on an annual or monthly basis and who are not accustomed to a tropical climate; to American citizens employed on the gold hourly roll during the year 1910; and to all employes not accustomed to a tropical climate on the gold hourly roll subsequent to January 1, 1911.

17. Employes born in the tropics are considered to be accustomed to a tropical climate, unless they have spent the greater part of their lives in the temperate zones.

Where leave may be spent—18. Leave with pay, at the expiration of which the employe expects to return to duty, must be spent in a locality which affords the necessary change of climate.

19. Such leave may be spent anywhere outside the tropics, or within the tropics at the following places which have an altitude sufficient to afford the necessary change of climate: Honda, Colombia; Lima and Callao, Peru; Boquete and Santiago, Republic of Panama; Cartago, Alajuela, and San José, Costa Rica; Guatemala City, Guatemala; Yirasol, San Salvador; and the parishes of St. Elizabeth, Manchester, St. Ann's, and St. Andrews, Jamaica.

20. Leave with pay, at the expiration of which the employe's service is to terminate may be spent wherever the employe chooses.

Computation of leave—21. In computing the annual leave due an employe, first ascertain how many days are to be deducted from his service (under Section 1) since he last was granted leave. The date of his service year will be delayed by that number of days. That is, if his service year originally dated from January 15, and 35 days are charged against him, his year will date from February 19. Ten months after February 19 his annual leave will be due, or December 19.

22. In computing leave earned by service in both 1910 and 1911, or on both the hourly and monthly rolls, the following rules will govern:

(*a*) Leave will be due any time after ten months' continuous service, computing the leave as if the employe had served a full year of twelve months.

(*b*) For each full month on the hourly gold roll in 1910 count one and one-sixth days' leave.

For each full month on the hourly gold roll in 1911, and subsequently, count two and one-third days' leave.

For each full month on the monthly gold roll count three and one-half days' leave.

(*c*) It should be noted that only American citizens are entitled to leave for service on the hourly gold roll in 1910, but for service after 1910, citizenship is not considered.

23. No leave will be computed on a fraction of a month. When computation of leave results in a fraction of a day, a halfday, or over, will count as one day. No credit will be given for less than a halfday.

Return from leave—24. Employes are expected to report for duty at the expiration of their authorized leave. In case of unavoidable delay, the employe will be allowed time in addition to the leave authorized in which to report, not to exceed fifteen days. An employe not reporting for duty within this fifteen-day period will forfeit pay for his leave and may be discharged.

Payment for leave—25. Payment for the leave of an employe will be made the first pay period after the employe returns to the Isthmus and reports for duty.

26. When service terminates at the expiration of leave, the employe will be paid for the full period of his leave without returning to the Isthmus.

27. On and after October 1, 1912, a cash payment for leave due an employe whose service is terminated will be made to him when he leaves the service, or to his estate in case of his death, equivalent to the amount the employe would have received for the full period of leave which would have been granted. This applies only to cases where the leave is to begin on or after October 1, 1912, or where the employe's death occurs on or after that date.

This rule is at present in force for Panama railroad employes and the date named does not, therefore, apply to them.

GEO. W. GOETHALS,
Chairman and Chief Engineer, I. C. C.
President, Panama Railroad Company.

Standard Oils and Lubricants.

CULEBRA, C. Z., July 1, 1912.

CIRCULAR NO. 314-I. (Superseding CIRCULAR NO. 314-G:)

The following list of illuminating oils, and lubricating oils and greases will be considered as standard for the Isthmian Canal Commission and Panama Railroad Company, and will be used only for the purposes indicated, excepting only as noted in the last paragraph of this order. All requisitions on the Quartermaster's Department shall specify the oil or lubricant desired, either by the I. C. C. number given below, or by name or by both, and no name other than that given below for each particular oil or lubricant shall be used in designating the same on requisitions, etc. No oils or lubricants will be requisitioned for unless the same are included in the following list, until after application for authority to procure same, showing the necessity therefor, has been first submitted to and approved by me.

The metal drums in which most of the lubricating oils are furnished have to be returned to the oil contractor in good condition. Care should, therefore, be exercised in their handling to prevent both damage and loss of oil, and in no case should they be used as a continuous container for the same or any other oils, but when empty should be returned promptly to the Quartermaster's Department.

The prices given below indicate the actual cost to the Commission and Panama Railroad Company of all oils and lubricants, delivered at Cristobal, under the present contract, (cost of drums not included) and are

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to May 31, 1912, follows:

PERIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total.
To June 30, 1909	3,427,090.29	....	9,673,539.28	69,622,561.42	78,022,606.10	....	160,745,797.09
Fiscal year, 1910	709,351.37	....	1,803,040.95	26,300,167.05	2,863,088.83	....	31,675,648.28
Fiscal year, 1911	755,079.44	....	1,717,792.62	27,477,776.19	3,097,959.72	....	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,089,361.82	312,920.11	....	2,615,340.33
August, 1911	74,768.45	1,878.27	156,954.79	2,287,506.30	355,087.42	86,243.14	2,962,438.37
September, 1911	64,905.24	1,805.83	146,912.23	2,212,702.66	234,233.58	86,275.56	2,746,835.10
October, 1911	64,143.49	1,586.71	152,252.71	2,751,377.24	323,154.80	32,061.45	3,324,576.40
November 1911	66,491.92	2,502.39	138,404.22	2,346,719.44	200,614.00	93,952.56	2,848,684.53
December, 1911	66,013.49	1,854.62	143,745.59	2,467,291.16	316,891.32	60,794.07	3,056,590.25
January, 1912	74,737.19	2,581.53	114,637 59	2,228,910.21	451,899.54	148,983.75	3,021,749.81
February, 1912	71,769.71	2,330.07	115,308.91	2,326,058.48	249,658.11	73,488.96	2,838,614.24
March, 1912	67,304.46	2,002.52	123,461.41	2,489,702.10	290,937.83	87,356.62	3,060,764.94
April, 1912	62,768.03	2,111.60	123,398.89	2,426,334.10	161,038.21	97,177.11	2,872,827.94
May, 1912	67,106.31	1,830.87	125,493.80	2,564,408.39	59,379.11	98,496.15	2,916,714.63
Total	5.644.424.61	23,011.76	14,672,578.82	149,590,876.56	86,939,468.68	864 829.37	257.735.189 80

not intended to supersede the prices given in the price book of the Quartermaster's Department, and should not be used in the material accounts.

Cost per Gal.
I.C.C NO. *Drums. Cans.*

1 Valve oil.......... .195 ......

For the internal lubrication of steam valves and cylinders on all classes of equipment. For use on the crank case of Westinghouse vertical compound engines.

2. Air compressor cylinder oil.......... .15 ......

For the internal lubrication of air cylinders of air compressors, and for pneumatic hammers and drills.

3. Marine engine oil.......... .275 ......

For marine engines, but not in crank cases, where it would be agitated and mixed with water, for, being a compound oil, it would emulsify if so used; also, for the block bearings of suction dredges.

4. Stationary engine oil.......... .13 .....

For stationary engines, electric dynamos, and motors, wood and metal working machinery, and for the general lubrication of machinery; also, for dies of bolt cutters, turret lathes, etc., except where the use of lard oil is permitted. (See note under lubricant No. 11).

5. Locomotive engine oil.......... .11 .....

For all locomotives, running gear of all locomotive cranes, deck machinery of dredges (except engines,) and for cold saws in machine shops.

6. Turbine engine oil.......... .13 ....

For all step bearings of turbines in the Miraflores and Gatun power plants only. This oil is also known as step bearing oil.

7. Gas engine oil.......... .23 ......

For the cylinders of internal combustion engines.

9. Car oil.......... .10 .....

For the journals of all cars, passenger coaches, locomotive tenders, and rolling stock generally; for steamshovel bearings where not equipped with grease cups, and for tripod drills and switches.

10. Transformer oil.......... .28 ......

For use in the electrical subdivision in air-cooled transformers only.

11. Lard oil.......... ..... .80

For hand torches for illuminating purposes only on marine equipment. On land, for shop use on pipe-threading machines; and it may be substituted for stationary engine oil (I. C. C. No. 4) when necessary, on dies of turret machines and on bolt cutters, when working refined iron or tough machinery steel. The use of this oil should be minimized to the greatest possible extent on account of its high cost.

12. Ammonia cylinder oil.......... .35 .. ...

For the internal lubrication of cylinders of ammonia compressors only.

In bbls.

13. Crude oil.......... .0262

For the lubrication of steamshovel chains, cables where designated, and general purposes where oils and greases have been used as a preservative.

LUBRICATING GREASES.

Cost per Lb.
In bbls.

20. Nonliquid oil.......... ..... .05

This is an oil of the consistency of vaseline for the lubrication of sheaves of carriages on the Lidgerwood cableways at Gatun, for air brake cylinders and triple valves, and such pneumatic drills and motors as may be equipped for the use of grease.

In cons.

21. Cup grease (yellow).......... ..... .06

For all classes of lubrication where grease is used in compression cups. This grease is being received in two consistencies, No. 3 and No. 5, the No. 3 of lesser consistency to be used on machinery subject to normal temperature, and the No. 5 of heavier consistency to be used on machinery subject to higher temperatures.

22. Gear grease.......... ..... .0275

For all classes of lubrication requiring grease for which compression cups are not adapted. This includes the center and side bearings of cars, cranes, and steamshovels, also wire cables, both standing and running, etc.

In bbls.

23. Cable grease.......... ..... .0275

For the "Interlocked-wire" track cables of the Gatun cableways exclusively.

24. Crank pin grease.......... ..... .085

For use on locomotive crank pins only where pressure cups are used. Care should be exercised not to confound this grease with cup grease Nos. 3 and 5 (I. C. C. No. 21.) which is not suitable for this purpose.

ILLUMINATING OILS.

Cost per Gal.
Drums Cons.

30. Signal oil.......... ..... .37

For use in railroad lanterns only, and in the cab lights of engines.

31. Kerosene oil.......... .1225 .1425

For use in locomotive headlights, passenger coach, and similar lamps, ordinary lanterns, and for cleaning purposes.

GASOLINE.

40. Gasoline.......... .217 .24

For use on gasoline launches, motor cars, blow torches, cleaning, etc.

Standard hand oilers and oil cans should be used as provided in Circular No. 338–C.

A copy of this circular shall be posted in all stationary plants, shops, engine houses, oil houses, on all marine equipment, and in such other places as may be necessary to insure the cognizance of same by all concerned.

Substitutions of cheaper grades of the standard I. C. C. and P. R. R. lubricants given above, may be approved by the traveling engineers wherever practicable, the above circular defining in a general way their accepted uses.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

TELEPHONE DIRECTORY CHANGES.

The following additional changes have been made in the list of subscribers published in the Panama Railroad Company's telephone directory as of May 15, 1912. Telephone subscribers are requested to make a note of these changes in their copy of the directory:

ADDITIONS.

EXCHANGE.	Number.	Name.	Location.	Dept.	Office or Residence.
Empire	201	Ad. Faure, cost keeping accountant	Culebra	C. E.	Office
Empire	179–B	J. C. Craig, traveling engineer	Empire	C. E.	Office
Colon	1	Drafting office, P. R. R.	Colon	P. R. R.	Office
Corozal	28–B–2	Balboa terminal work	Balboa	Pac. Div.	Office
Colon	728–4	East Diversion switch	Margarita Island	Fort.	Office
Colon	221	J. A. Moore	Colon	P. R. R.	Residence
Empire	92	Col. H. A. Greene.	Camp E. S. Otis	....	Residence
Empire	86–R	W. H. Warr	Empire	Clubhouse	Residence
Empire	66–B–2	F. L. Kent	Paraiso	Cent. Div.	Residence
Panama	119	C. G. Jones	East Balboa	Fort.	Residence
Gatun	28–B	C. E. Langley...	Gatun	Atl. Div.	Residence
Gatun	727–7	Steamshovel No. 121	Gatun	Atl. Div.	....
Gatun	125	W. H. Graham	Gatun	Atl. Div.	Residence
Gatun	128	Tool house	Gatun	C. E.	Office
Gatun	81–B	General Foreman Judd	Gatun	Atl. Div.	Office
Colon	209	J. A. Hennessy	Cristobal	P. R. R.	Residence
Gatun	99–A	Pump station	Agua Clara	Atl. Div.	Office
Empire	752–3	Dump No. 2	West Culebra	Cent. Div.	Office
Colon	52	Tower "A"	Cristobal	P. R. R.	Office
Colon	55	Tug *Phoenix*	Cristobal	P. R. R.	....
Colon	58	Motor car house	Colon	P. R. R.	....
Gatun	44–A–2	Borrow pit	New Gatun	Atl. Div.	Office
Gatun	81–B	Borrow pit, Spillway	Gatun	Atl. Div.	Office
Gatun	88–A	Dr. A. G. Farmer	Gatun	San.	Residence
Colon	14–B	W. F. Shipley	Cristobal	Com.-Sub.	Residence
Empire	757–1–1	Observatory	Calle Larga	C. E.	Office
Colon	31–B	R. M. Elder	Cristobal	Fort.	Residence
Empire	118–R	B. D. Pender	Culebra	Mech.	Residence
Colon	108	Land office, A. A. Greenman	Colon	P. R. R.	Office
Corozal	25–A	Dispatcher	Miraflores	Pac. Div.	Office
Empire	67–R–1	J. M. Plummer	Paraiso	P. R. R.	Office
Panama	170	B. F. Metcalf, yard master, P. R. R.	Balboa	P. R. R.	Office

REMOVALS.

EXCHANGE.	Number.	Name.	Location.	Dept.	Office or Residence.
Panama	324	B. F. Metcalf	East Balboa	Cent. Div.	Office
Empire	744–4	B. F. Metcalf	East Balboa	Cent. Div.	Office
Empire	169	J. M. McNeil	Empire	Cent. Div.	Residence
Gorgona	6	B. D. Pender	Gorgona	Mech.	Residence
Toro Point	16–3	R. M. Elder	Toro Point	Fort.	Residence
Colon	249–B	C. C. Snedeker	Cristobal	Atl. Div.	Residence
Panama	180	Census office	Panama	C. A.	Office
Empire	193	D. E. Irwin	Empire	C. E.	Residence
Empire	67–R–1	Stewart's car	Paraiso	P. R. R.	Office
Gatun	125	J. A. Moore	Gatun	P. R. R.	Residence
Colon	31–B	Clement Walker	Cristobal	Atl. Div.	Residence
Gatun	49	Y. M. Industrial R. R.	Gatun	Atl. Div.	Office
Toro Point	21	Breakwater trestle	Toro Point	Atl. Div.	Office
Gatun	28–B	W. N. Windes	Gatun	Atl. Div.	Residence

CHANGE IN NUMBERS.

Empire	L. H. Farmer	Empire	198–R	85–B	Residence
Empire	T. H. Jordan	Pedro Miguel	82–R–2	746–2	Office
Empire	W. A. Evans, Jr.	Empire	88–B	198–R	Ofc. & Res.
Empire	Air compressor	Rio Grande	118	118–B	Office

Express Shipments of Heavy Castings.

CULEBRA, C. Z., July 17, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

You are referred to the Acting Chairman's circular letter to heads of departments and divisions dated March 19, 1909, reading, as follows:

> "Attention has been called by the Panama Railroad Company to the fact that express shipments of heavy castings and large packages have caused delays in the time of passenger trains. In future, shipments of this nature will not be handled on passenger trains, except in cases of absolute necessity. If advance notice is given, the Panama Railroad Company will arrange to handle emergency shipments on freight trains without delay. Please issue the necessary instructions to all concerned."

The General Superintendent of the Panama railroad complains that the shipment of I. C. C. material by passenger trains has resulted in considerable delay at stations in unloading, and renders it difficult to maintain schedule.

In the future you will limit your requests for shipment of material by passenger trains to strictly emergency cases, and under no circumstances must requests of this nature be made unless the urgency of the situation fully justifies the same.

Respectfully,
GEO. W. GOETHALS,
Chairman and Chief Engineer.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, July 20, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia	Alhajuela	Gamboa	Gatun Lake
Sun., July 14	127.0	93.4	45.8	30.8
Mon., July 15	128.6	93.2	45.6	30.6
Tues., July 16	131.9	96.8	49.3	30.6
Wed., July 17	130.3	96.2	50.3	31.2
Thurs. July 18	127.4	93.9	47.3	31.3
Fri., July 19	126.6	93.1	45.6	31.4
Sat., July 20	131.0	96.2	50.1	31.5
Height of low water to the nearest foot	125.0	91.0	44.0	

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

CULEBRA.

A local volleyball tournament was organized last week with three teams, the "Whites," the "Reds," and the "Blues," six men on each team. During the week ending Saturday, July 20, they played three games with the following results:

Team.	Won.	Lost.	P. C.
Blues	6	4	.600
Whites	5	5	.500
Reds	4	6	.400

The members of the teams are, as follows: *Whites*—Baumer, captain; Sjoblom, Becklem, Worsley, Hainsley, Hostetter.

Reds—Kaufmann, Hoffmann, Palmer, captain; Herrington, Armstrong, Stillwell.

Blues—Warner, captain; Van Zandt, Mitchell, Garrison, Coppin, Cook.

An all-around team will be picked from the players later.

A local bigpin bowling league will be organized. Every one interested is requested to come out and join and get in shape for the all-Isthmian league. Prizes for bowling in August will be a pair of shoes for high score, and a pennant for the greatest number of games played. The days set aside for bigpins are Mondays, Wednesdays, Thursdays and Saturdays.

The Gatun checker club will play the Culebra club on Saturday evening, July 27. The clubhouse has procured a carom board for the members who enjoy a game of that kind.

High scores in duckpins during the past week were, as follows: Judge, 106; Silver, 101; Hanley, 102.

EMPIRE.

Three match games were bowled in the local bowling league during the week of July 14, as follows: On Monday, July 15, the Democrats won two games from the Suffragettes; on Wednesday, July 17, the Independents won two games from the Democrats; on Friday, July 19, the Progressives won two games from the Socialists. Half of the league games have been bowled and the Independents have a slight lead.

On Saturday, July 20, the Cristobal tenpin team lost two games to the Empire team on the latter's alleys.

On Friday night, July 19, the local basketball league was started, when the "Germans" won from the "English" by the score of 13 to 3.

The June pool tournament was won by F. G. Miller.

The Corozal bowling team will be at Empire Saturday, July 27.

GORGONA.

Mr. Booz, who has been in the hospital for the past week, is expected to return within the next few days. He leaves for the United States on July 28.

The sunset song services at the clubhouse on Sunday evenings at 7 o'clock continue to be well attended.

The gymnasium work is being followed with great interest. New members are invited to join.

"Woman suffrage" was discussed pro and con at the meeting of the current topics club last Wednesday evening. The ladies of Gorgona were invited, and refreshments were served.

GATUN.

Three-hundred and forty-four people attended the return engagement of "Singbad the Sailor" at the Gatun clubhouse on Thursday evening, July 18. In addition to the opera, vocal solos were given between acts by Dan Stahley, and Mrs. A. P. Boyd of Corozal. The Tenth Infantry orchestra furnished the music.

The physical classes are still being conducted under the direction of a volunteer leader, Mr. P. O. Brunner. Handball will be given special attention for the next few weeks. Two nights each week will be devoted to basketball practice in preparation for the Isthmian league which opens up the first part of September.

A farewell reception was given at the clubhouse on Friday evening, July 19, in honor of Mrs. Chas. Harris and daughter Miss Eva, who leave soon for the United States. Mrs. Harris was presented with an ivory umbrella handle by the dramatic club, and Miss Harris was given a gold watch by the Lock City club of Gatun.

Gatun took two out of three games of tenpins from Gorgona on Saturday evening, July 20.

CRISTOBAL.

On Saturday night, the Empire bowling team was defeated by the Cristobal team by the following scores:

Empire.				Cristobal.			
Drake	155	167	167	Beattie	139	183	199
Spinks	166	114		Restock	158	156	147
Sawtelle	121		129	Orr	118		146
Danielson	129	153	136	Burns, T.	148	134	
Henry	154	147	149	Barrett	187	188	195
Pinney		159	171	Peterson		147	110
Total	725	740	752		750	808	797

The next in the series of moving picture entertainments will be on Monday, July 29.

Thursday night, at a meeting of the basketball players, it was decided to organize a local league with four teams in the contest. There were 20 men out to practice.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Cold Storage Prices.

The following changes have been made in the list of cold storage articles as of July 21:

Pot roast advanced to 15 cents per pound.
Eggs advanced to 27 cents by the dozen.
Cabbage reduced to 4 cents per pound.
Tomatoes reduced to 5 cents per pound.
Cherres at 20 cents per pound added.
Peaches at 8 cents per pound added.

Rainfall from July 1 to 20, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	3.00	16	8.29
Balboa	3.31	16	7.88
*Miraflores	1.87	17	5.56
Pedro Miguel	2.08	16	5.38
Rio Grande	1.25	16	4.62
Central Section—			
Culebra	1.38	16	5.93
*Camacho	1.58	17	5.66
Empire	1.38	16	5.56
Gamboa	3.45	16	10.87
*Juan Mina	2.22	17	7.01
Alhajuela	2.34	1	8.13
*El Vigia	2.78	2	11.14
*Gorgona	3.65	17	8.81
*Frijoles	1.08	17	8.32
*Monte Lirio	2.50	17	9.63
Atlantic Section—			
Gatun	2.31	16	9.62
*Brazos Brook	6.15	17	14.88
Colon	2.99	17	11.37
Porto Bello*	3.49	16	†15.38

*Standard: rain gage—readings at 5 p. m. daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., July 19.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 31, 1912, (75th meridian time):

DATE.	High	Low	High	Low
	A.M.	A.M.	P.M.	P.M.
July 25	12.50	6.50	1.00	7.22
July 26	1.55	7.52	2.00	8.16
July 27	2.47	8.45	2.50	9.03
July 28	3.30	9.30	3.33	9.46
July 29	4.05	10.10	4.11	10.25
July 30	4.38	10.47	4.45	11.00
July 31	5.08	11.20	5.18	11.35

Sale of Public Buildings at Nombre de Dios.

OFFICE OF THE CHIEF QUARTERMASTER,
CULEBRA, C. Z., July 19, 1912.

Sealed proposals will be received at this office until 3 p. m., Monday, August 19, 1912, and then opened, for the purchase of any or all buildings, including plumbing, owned by the Commission at Nombre de Dios. List of buildings and full information will be furnished upon application to any district quartermaster, or to this office. Proposals must be accompanied by five per centum (5%) of amount bid. Envelopes containing proposals should be endorsed "Proposal for purchase of buildings," and addressed to Colonel C. A. DEVOL, Chief Quartermaster, Culebra, C. Z.

Sale of Lumber at Public Auction at Porto Bello.

OFFICE OF THE CHIEF QUARTERMASTER,
CULEBRA, C. Z., July 20, 1912.

There will be sold at public auction, by the district quartermaster at Porto Bello, at his office, at 1 p. m., Monday, August 5, 1912, to the highest bidder for cash, the following Isthmian Canal Commission property: 15,000 feet, board measure, lumber, second hand. The Government reserves the right to accept or reject any or all bids. For further information apply to the district quartermaster, Porto Bello.

C. A. DEVOL, *Chief Quartermaster.*

FOUND—At Gatun, on July 7, an eighteen-foot Mullin steel gasoline boat equipped with a three horse-power engine. Owner will please communicate with R. B. Johnson, Gatun.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Advance	P. R. R.	Monday	July	22
Panama	P. R. R.	Saturday	July	27
Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21
Allianca	P.R.R.	Tuesday	Aug.	27
Colon	P. R. R.	Tuesday	Sept.	3
Advance	P. R. R.	Monday	Sept.	9
Panama	P. R. R.	Saturday	Sept.	14
Allianca	P. R. R.	Friday	Sept.	20

CRISTOBAL TO NEW YORK.

Colon	P. R. R.	Sunday	July	28
Advance	P. R. R.	Saturday	Aug.	3
Panama	P. R. R.	Friday	Aug.	9
Allianca	P. R. R.	Thursday	Aug.	15
Colon	P. R. R.	Wednesday	Aug.	21
Advance	P.R.R.	Tuesday	Aug.	27
Panama	P. R. R.	Tuesday	Sept.	3
Allianca	P. R. R.	Sunday	Sept.	8
Colon	P. R. R.	Sunday	Sept.	15
Advance	P. R. R.	Saturday	Sept.	21
Panama	P. R. R.	Friday	Sept.	27
Allianca	P. R. R.	Thursday	Oct.	3

NEW YORK TO COLON.

Metapan	U. F. C.	Wednesday	July	17
Prinz Sigismund	H.-A.	Saturday	July	20
Tivives	U. F. C.	Saturday	July	20
Danube	R. M.	Saturday	July	20
Zacapa	U. F. C.	Wednesday	July	24
Prinz Joachim	H.-A.	Saturday	July	27
Almirante	U. F. C.	Wednesday	July	31
Carrillo	U. F. C.	Saturday	Aug.	3
Prinz Eitel Friedrich	H.-A.	Saturday	Aug.	3
Clyde	R. M.	Saturday	Aug.	3
Santa Marta	U. F. C.	Wednesday	Aug.	7
Turrialba	U. F. C.	Saturday	Aug.	10
Prinz August Wilhelm	H.-A.	Saturday	Aug.	10
Metapan	U. F. C.	Wednesday	Aug.	14
Oruba	R. M.	Saturday	Aug.	17

COLON TO NEW YORK.

Prinz August Wilhelm	H.-A.	Monday	July	29
Santa Marta	U. F. C.	Thursday	July	25
Turrialba	U. F. C.	Tuesday	July	30
Metapan	U. F. C.	Thursday	Aug	1
Prinz Sigismund	H.-A.	Monday	Aug.	5
Oruba	R. M.	Tuesday	Aug.	6
Tivives	U. F. C.	Tuesday	Aug.	6
Zacapa	U. F. C.	Thursday	Aug.	8
Prinz Joachim	H.-A.	Monday	Aug.	12
Almirante	U. F. C.	Thursday	Aug.	15
Prinz Eitel Friedrich	H.-A.	Monday	Aug.	19
Thames	R. M.	Tuesday	Aug.	20

NEW ORLEANS TO COLON.

Abangarez	U. F. C.	Saturday	July	27
Atenas	U. F. C.	Saturday	Aug.	3
Orleanian	U. F. C.	Wednesday	Aug.	7
Parismina	U. F. C.	Saturday	Aug.	10

COLON TO NEW ORLEANS.

Atenas	U. F. C.	Thursday	July	25
Orleanian	U. F. C.	Thursday	July	25
Parismina	U. F. C.	Thursday	Aug.	1
Abangarez	U. F. C.	Thursday	Aug.	8

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans, via Limon, on Thursdays, at 5 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.

The following ships arrived, at or departed from, the port of Balboa during the week ending July 20:

Arrivals—July 15, *Urubamba*, from Callao; July 16, *Naraja*, from San Francisco; July 16, *Peru*, from Guayaquil; July 17, *Aysen*, from Valparaiso; July 19, *Manavi*, from Buenaventura; July 20, *San Juan*, from San Francisco.

Departures—July 16, *Chile*, to Guayaquil; July 16, *Mexico*, to Valparaiso; July 16, *Ecuador*, to Guayaquil; July 18, *Cuzco*, to San Francisco; July 19, *Acapulco*, to San Francisco; July 19, *Barracouta*, to San Francisco.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, JULY 31, 1912. No. 49.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Highest Daily Steamshovel Record.

Steamshovel No. 120 (T. P. Kelleher, engineer, and L. P. Bonnell, craneman,) working in the west borrow pit for Gatun Dam, loaded 202 large Oliver dump cars containing 3,434 cubic yards in the working day of eight hours on July 6. This is 119 cubic yards more than the previous daily Isthmian record for a 70-ton shovel, made by the same shovel and crew on April 2, 1912.

Contract for Panama Coffee.

The Commissary-Subsistence Department has contracted for the delivery of 50,000 pounds of coffee, grown by an American planter at El Boquete, in Chiriqui province, Republic of Panama. This is a high grade coffee, its use having been decided upon after careful test in the laboratory at Cristobal. Delivery will be made in two shipments, and 28,000 pounds have been received. It is stored in tin-lined compartments in the raw material warehouse, and will be roasted, ground, and packed as required. During the fiscal year ending June 30, 1912, 341 780 pounds of coffee were roasted, producing 280,909 pounds of roasted coffee. The value of the product was $64,220.98.

Laying Towing Track on Lock Walls.

Rack track, for the use of the electric towing locomotives in guiding vessels through the locks, has been laid on the greater part of the completed walls at Gatun and Pedro Miguel Locks. None has been placed at Miraflores Locks, and probably will not be until the work at Pedro Miguel is well toward completion. At Gatun, towing track has been laid on the center wall, from the upper guard gates, in the approach to the locks, to the incline between the upper and middle locks, while on the side walls it has been laid from the downstream piers of the emergency dams to the intermediate gates in the middle lock. A total of 7,326 feet had been placed at Gatun up to July 20, leaving 14,619 feet to be placed. On the single lift lock at Pedro Miguel, practically all of the track for the side and center walls proper has been laid, and the force is ready to extend the work on the approach and flare walls as they are brought to completion. A total of 5,526 feet, 22 per cent of which is on recess covers, had been laid to July 20, leaving 7,687 feet yet to be placed.

As each section of track is laid it is tested with a truck, on which a cogwheel engages the rack in the manner of the driving cog of the locomotive. The interworking of the cog and rack is carefully observed, and slight variations in the pitch of the rack subject the section to condemnation.

Incorporation in the Canal Zone.

In response to inquiry from Americans resident on the Isthmus, the Department of Law has expressed the opinion that there is no permissive law in the Canal Zone under which corporations may be created, and no incorporation could be had without an act of Congress, since under the United States system of government, corporations can be created only by special act of legislature or under a general legislative enactment permitting incorporation. The Colombian or Panamanian laws on the subject, together with other laws political in character, ceased to be operative in the Canal Zone after the change of sovereignty.

Contracts for Transformer Equipment.

Award has been made on the bids for supplying the electrical equipment for the transformer rooms within the lock walls. The requisite equipment, of which advertisement was made in Circular 705, from the Washington office of the Isthmian Canal Commission, was described in the THE CANAL RECORD of April 10, 1912. Award for 72 power transformers, 39 lighting transformers, and 36 oil-switch banks was made to the General Electric Company. The award for 36 switchboards has been held up, pending investigation. Miscellaneous equipment, consisting of ground plates, copper bars, tape, cable bells, and various accessory fixtures, is to be purchased from the Standard Underground Cable Company, the G. & W. Electrical Specialty Company, the Westinghouse Electric and Manufacturing Company, and the General Electric Company.

Use of Cableways at Lower End of Gatun Locks.

Preparations are being made to extend to the north the two pairs of tracks on which the towers of the duplex cableways across Gatun Locks are moved, in order that the system may be used for placing the concrete in the lower approach and flare walls. Since the span of the cables is 800 feet, of which 390 feet extend to the east of the axis of the locks, and 410 feet to the west, the front, or inner trucks of the towers will clear by at least 90 feet the outermost corners of the flare walls. The sites of the track extensions have been excavated to fairly firm strata of clay and argillaceous rock by the dredges, which have been excavating for the approach and flare walls, and fills of heavy rock are being built upon these strata to support the tower tracks. The fill on the east side is well toward completion, while on the west side, a pile trestle is being driven from the north toward the present west backfill, and the placing of rock has been begun. The stresses on the towers, placing a pressure of 425,000 pounds on the wheels of the front track of the head tower, require an unusually firm track bed. A part of the support at the lower end of the present backfill was so weakened by the excavation at the lower end of the locks that the towers had to be moved back for about one hundred feet above the point at which they were placing concrete. A hopper and Decauville cars were used for carrying concrete to the places which could not be reached directly by the cableways.

Dredges to Excavate 7t Feet Below Sealevel.

The dipper and pipeline suction dredges, which have been engaged in excavating at the lower end of Gatun Locks for the guide and flare walls, have carried the excavation to 41 feet below sealevel. In order that they may uncover the solid rock for the wing wall foundations. which drilling has indicated to lie about 70 feet below sealevel. the channel through which the site was flooded has been dammed, and, as the suction dredge continues pumping out the silt-laden water in which the spoil is carried away, it will lower the surface of the water in the lagoon. By such means the dredges will be lowered as far as necessary, probably about 30 feet below the level of the sea.

Inasmuch as the pipeline suction dredge carries away about four times as much water as earth in its discharge, it is necessary to supply the lagoon with additional water. By this means the level of the water may be regulated so that the dredges may work to best advantage. A special outfit was assembled at the dry dock shops for pumping the required water. It consists of a 16-inch centrifugal pump, with direct connected engine, supplied with steam from an old boiler taken out of the tug *Bohio*, all mounted on a small, flush-deck steel barge. The pump and engine are part of the equipment of a suction dredge originally used in sand excavation at Nombre de Dios and wrecked at that place during a storm. This dredge was made up with equipment from various sources, installed in an old French hull. The outfit in which the pump is now installed is stationed in the East Diversion and pumps about 7,000 gallons of water a minute, through an 18-inch pipeline, maintaining the water in the lagoon at the desired level.

Dredge *No. 4* is doing the suction excava-

NOTES OF PROGRESS

(Continued.)

tion, while the dipper dredge *Chagres* continues with the removal of the material which cannot be handled by the suction dredge. The material excavated by the *Chagres* is loaded into barges and towed by the tug *De Lesseps* across the lagoon, where the barges are dumped into a pit made for this purpose by the pipeline suction dredge. Steamshovels could not be used for the excavation for the wall sites, on account of the softness of most of the material to be removed.

Sold Property to be Marked "ICS."

In order to avoid confusion, property of the Isthmian Canal Commission, which is sold locally, will be branded *ICS*, indicating "Inspected, condemned, and sold." This method, in vogue at the sale of government property in the United States, has been in effect on the Isthmus for some time to the extent of branding animals on the neck with the mark, and will hereafter be extended to all local sales.

CONCRETE WORK IN THE LOCKS.

Over 90 per cent of the concrete for the locks is in place, the amount at the close of work on July 27 being 3,864,156 cubic yards, out of a total of approximately 4,302,563. A total of 21,613 cubic yards of concrete was laid in the locks during the week ending July 27.

GATUN LOCKS.

Over 94 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on July 27 being 1,887,896 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day of the week ending July 27, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.						*Cu. Yds.*	*Cu. Yds.*
July 22	326	7.32	2					326
July 23	456	6.04	2					456
July 24	266	4.34	2					266
July 25	382	6.54	2					382
July 26	312	5.22	2					312
July 27	322	5.32	2					322
Total	2,064	35.58	2					2,064
Previously reported								1,885,832
Grand total								1,887,896

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 97 per cent completed, 869,162 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on July 27. The record for each of the working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
July 22	260	6.50	1	282	22.00	5		542
July 23	210	5.25	1	283	23.50	5		493
July 24	220	5.50	1	233	21.75	4		453
July 25	124	3.25	1	312	25.50	5		436
July 26	6	.25	1	322	28.00	5		328
July 27	212	5.50	1	240	21.50	5		452
Total	1,032	26.25	1	1,672	142.25	4.83		2,704
Previously reported							4,493	866,458
Grand total							4,493	869,162

MIRAFLORES LOCKS.

Over 78 per cent of the concrete for the system of two twin locks at Miraflores was in place July 27, the total amount on that date being 1,107,098 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each working day last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds*			*Cu. Yds.*	*Cu. Yds.*
July 22	972	39.33	7	1,060	14.33	2	395	42.00	7		2,427
July 23	1,160	36.75	7	1,050	19.00	2	494	47.00	6		2,704
July 24	1,158	35.67	7	1,300	15.00	2	492	48.00	7		2,950
July 25	938	34.83	7	1,350	20.50	2	583	54.50	7		2,871
July 26	1,074	38.67	7	1,462	20.50	2	543	58.00	7		3,079
July 27	1,254	44.17	7	1,024	23.00	2	536	55.00	7		2,814
Total	6,556	229.42	7	7,246	112.33	2	3,043	304.50	6.83		16,845
Previously reported										3,693	1,090,253
Grand total										3,693	1,107 098

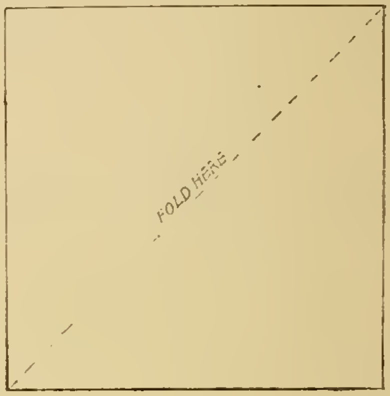
SANITARY DRINKING CUP.

Made from Ordinary Sheet of Paper in a Few Seconds.

An individual drinking cup, which is watertight and portable, can be made in a few seconds from an ordinary sheet of letter paper, or other paper available.

To begin with, the paper should be square. If not so, turn over an edge or tear off a strip to make it square. As shown in Figure 1, fold into a triangle, with edges even. Having once folded, at any stage, do not unfold.

As shown in Figure 2, lay over each of the points at the acute angles of the triangle until it rests near the middle of the opposite edge. The result of this folding is outlined in Figure 3. Fold down the flaps at the top, one on either side, as in Figure 4, and the cup is completed.



THE PAPER—FIG. 1.

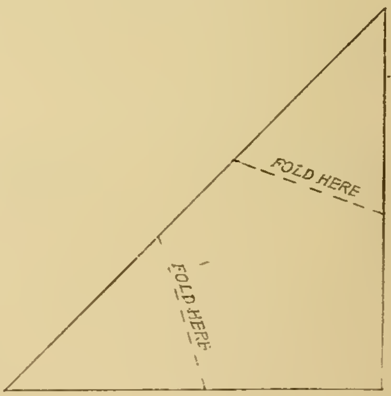


FIG. 2

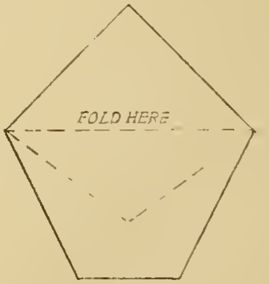
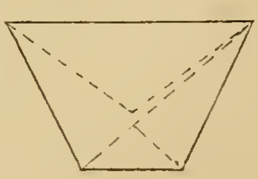


FIG. 3.



THE CUP—FIG. 4.

SOCIAL LIFE OF THE ZONE.

Women's Clubs.

Among the resolutions adopted at the biennial meeting of the General Federation of Women's Clubs, held at San Francisco June 25 to July 6, was the following:

> "That the federation unite with the Government in erecting a monument at Panama in commemoration of the completion of the Panama Canal."

Mrs. Percy V. Pennybacker, formerly president of the Texas State Federation, was elected president of the General Federation. On July 5, the death occurred in San Francisco of Mrs. Sarah Platt Decker, a former president of the General Federation. Mrs. Decker was taken ill during the early days of the biennial and died in the hospital from the effects of an operation.

The Ancon Study Club has completed its study of the stories of the standard and modern operas; this course included short biographical studies of the composers and librettists. The next course will consist of readings of seven of the Shakespearian plays, beginning with "Hamlet." Among the plays selected are: "The Merchant of Venice," "King Lear," "As You Like It," "Julius Cæsar," and "King Richard II." The setting and source of each play will be considered. The club has purchased a second hand, 15-volume edition of the Encyclopedia Britannica, edition of 1906. The books will be placed in the club library. The next meeting, with which the Shakespeare study begins, will be held at the home of Mrs. Wanson, Bishop's Hollow, on Friday, August 2, at 3 p. m.

The election of officers for the ensuing term for the Isthmian Chapter of the Daughters of Rebekah, Gorgona, was held early in July with the following result: Noble grand, Mrs. W. E. McCann; vice-grand, Mrs. J. C. Jansen; secretary, Samuel B. Bewlay; financial secretary, Mrs. L. E. Perry; treasurer, Mrs. William J. Vickery; chaplain, Mrs. J. W. Myers; right supporter to the noble grand, Henry Lotz; left supporter to the noble grand, Mrs. R. W. Babbitt; right supporter to the vice-grand, Mrs. Martin Wago; left supporter to the vice-grand, Richard Stoddard; inside guardian, B. F. Henckel; outside guardian, R. E. Gaul; warden, Mrs. Harry Rhodes.

The Order of the Eastern Star, Orchid Chapter, No. 1, Gorgona, has procured the Commission lodge hall for its meetings, and, beginning in August, the regular business meetings will be held at this place on the first Saturday evening in each month. Up to the present time the order has held its meetings in the chapel. The new arrangement will tend to increase the effectual work of the organization

Miscellaneous Notes.

At the Commission clubhouse at Culebra, a private dance was given on Saturday evening, July 13, and another private dance is scheduled for an early date in August. The Culebra dancing club will hold its monthly dance on Saturday evening, August 3. On August 20, there will be a general social evening at the clubhouse. A concert will be given by the orchestra from the steamship *Prinz August Wilhelm* of the Hamburg-American Line. Refreshments will be served. The entertainment will be open to all residents of the village.

The commencement number of *The Zonian*, the Canal Zone high school paper, was issued at the end of June. The number contains the usual contributions, consisting of short articles, essays, verses, photographs, and pen sketches; and class and department notes. Three prizes were offered for the best contributions and these were awarded, as follows; For a pen and ink drawing, by John J. Loulan, class '13; for a child story, by Helen Michaels, class '12, and a parody on Cicero's orations, by Ruth Hanna, class '12. The cover design is a girl's head by Master Delevante, a former student in the school.

Church Notes.

Owing to the removal of the majority of the American families from Balboa, and the removal of the Commission hotel building at that place, the Methodist Sunday school, which has been conducted by Deaconess Elsie Keyser for the past year, was formally disbanded at the close of the session on Sunday, July 14. Each pupil in the school was presented with a Bible. In accordance with the desire of the pupils, the money in the treasury was used for the purchase of articles of clothing for the babies' ward in Santo Tomas Hospital, in the city of Panama. The clothing was made by the older girls of the school under the supervision of their teacher. In 1911, two Sunday schools were organized, one at Balboa, and the other at East Balboa, by Miss Keyser, in response to a general request of the American families. Later, the two schools were consolidated. From the beginning, the work was successful and the enthusiasm and good spirit were maintained to the close.

The missionary study class in connection with the Woman's Foreign Missionary Society of the Methodist Episcopal Church, is occupied with the study of the countries of South America. The next meeting will be held on August 1, at the home of Mrs. Stetler, corner of Fourth of July street and the Ancon boundary road.

The Rev. Harry Compton, pastor of the Methodist Episcopal Church, has returned from his annual leave of absence spent in the United States and resumed his duties at the seawall church, Panama.

The Woman's Guild of St. Luke's Hospital Church, Ancon, will meet in the ladies' writing room at the Hotel Tivoli on Tuesday morning, August 6, at 9.30 o'clock.

The monthly meeting of the Woman's Altar Guild of Christ Church, Colon, will be held in the church on Tuesday, August 6, at 9 p. m.

The Woman's Altar Guild at Gatun meets in the Commission chapel on the first Thursday in each month at 10 a. m.

LABOR FORCE AND QUARTERS IN JUNE.

On June 26, there were 34,927 employes actually at work on the Canal and the Panama railroad, and of that number, 28,539 were Canal employes. The gold force on the Canal work, composed almost entirely of white Americans, was 4,125. The force report for June 26, 1912, was, as follows:

Department.	Silver employes.*															
	Artisans.						European laborers.		West Indian laborers.					Total silver.	Total gold.	Grand total.
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Const'ct'n and Eng'r'ng.	4,318	10	12	235	730	2,841	3,751	538	114	430	4 120	2 764	†253	20,116	3,046	23,162
Civil Administration....	186	..	..	2	3	24	......	......	...	.....	......	10	....	225	355	580
Sanitation	673		..	3	3	5	......	......	1	1	6	325	2	1,019	358	1,377
Quartermaster's........	911	..	...	101	125	237	60	22	30	.....	189	738	9	2,422	203	2,625
Subsistence............	648	..	..	2	.....	1	......	......	...	.....	......	......	....	651	54	705
Disbursements..........	7	..	.	....	.....	......	......	......	...	.....	......	......	....	7	25	32
Examinat'n of Accounts	4	..	.	....	... .	......	......	......	...	.....	......	......	....	4	84	88
Total	6,747	10	12	343	861	3,108	3,811	560	145	431	4 315	3,837	†264	24,441	4,125	28,569
Month previous........	6,753	11	13	338	875	2,928	3,915	439	151	503	4,210	3,788	‡279	24,203	4,148	28,351

Panama railroad force, 4,593, Panama railroad relocation force, 468; Panama railroad commissary force, 1,327. Total, 6,388. I. C. C. force, 28,539. Grand total, 34,927.

*All wages specified are in gold. †Includes 3 at 5 cents. ‡Includes 12 at 5 cents.

The force report for the Department of Construction and Engineering on June 26, follows:

Division.	Silver employes.*															
	Artisans.						European laborers.		West Indian laborers.					Total silver.	Total gold.	Grand total.
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Chief Engineer	199	..	..	29	95	373	136	36	...	12	603	264	12	1,759	342	2,101
Mechanical.............	196	3	2	26	60	371	58	4	...	.....	660	20	8	1,408	675	2,083
Atlantic................	1,601	6	9	82	223	627	1,001	215	...	26	565	216	24	4,595	655	5,250
Central.................	1,057	1	..	32	113	466	1,545	27	91	392	727	1,978	141	6,570	678	7,248
Pacific	1,265	..	1	66	239	1,004	1,011	256	23	.....	1,565	286	†68	5,784	696	6,480
Total	4,318	0	12	235	730	2,841	3,751	538	114	430	4,120	2,764	†253	20,116	3,046	23,162
Month previous.	4,267	11	13	233	762	2,790	3,856	433	119	502	4,092	2,611	†253	19,942	3,095	23,037

*All wages specified are in gold. †Includes 3 at 5 cents.

QUARTERS.

On June 30, there were 23,382 occupants of Commission quarters. Of these, 8,908 were white Americans, of whom 5,035 were men, 1,960 were women, and 1,913 were children. There were 5,558 Europeans of the laborer class, of whom 4,926 were men; 241 were women, and 391 were children. There were 8,915 West Indian negroes, of whom 6,698 were men; 941 were women, and 1,276 were children.

SALES OF CANAL SCRAP.

Statement of Quantities Sold and Revenues Derived Therefrom.

A statement of the sales of old French and American scrap iron in the United States is given below. It does not include sales for scrap rubber, rope, copper screening, belting, cable, old typewriters, etc., the gross receipts from the sale of which amounted to approximately $33,000 during the period from March, 1909, to May, 1912, inclusive. Sales of such scrap made prior to that period are not considered, as the proceeds were deposited in the Treasury as miscellaneous receipts, United States funds, and lost to Canal appropriations.

It will be noted that the last shipment of French scrap was made on August 1, 1911. On September 26, 1911, contract was entered into with the Chicago House Wrecking Company for the sale of all remaining French material not previously taken into property records for Commission use, for the lump sum of $215,000, the wrecking company to bear all expense of assembling and shipment, and to make payments at the rate of $8 the net ton, manifest weights, f. o. b. steamships at Canal Zone ports.

STEAMSHIP.	Sailing date.	French. Lbs.	American. Lbs.	Total sale weight	Sale price (G.T.)	Gross receipts.	Expense of shipment to the United States.				Net receipts.
							Freight.	Stevedoring.	Other.	Total.	
	1909.										
Ancon	Aug. 7	567,734		567,734	$13.80	$3,497.65	$1,348.37	$283.87	$.20	$1,632.44	$1,865.21
Allianca	Aug. 10	170,510		170,510	.60 cwt.	1,023.06					
Allianca	Aug. 10	93,600		93,600	20 76	867.47					
Allianca	Aug. 10	105,900		105,900	24.26	1,284.57	878.77	185.00		1,063.77	2,111.33
Colon	Aug. 16	29,950		29,950	11.27	150 68	71.13	14.98	30.15	116.26	34.42
Cristobal	Aug. 19	428,850		428,850	13.76	2,634.78	1,018.52	214.42	.20	1,233.14	1,401.64
Panama	Aug. 21	665,350		665,350	cwt.935	6,221 02	1,580.21	332.68	.20	1,913.09	4,307.93
Ancon	Sept. 8	1,176,000		1,176,000	14.52	7,623 00	2,793.00	588.00	.75	3,381.75	4,241.25
Ancon	Oct. 10	336,850		336,850	15.11	2,272.23	800.02	168.42	.75	969.19	1,303.04
Cristobal	Oct. 21	1,019,400		1,019,400	15.15	6,894.60	2,421.07	509.70	368.69	3,299.46	3,595.14
Ancon	Nov. 7	1,281,430		1,281,430	13.80	7,728.62	3,043.40	640.72	476.37	4,160.49	3,568.13
Cristobal	Nov. 21	211,650		211,650	13.35	1,261.40	502.67	105.82	131.71	740.20	521.20
Colon	Dec. 9	52,210		52,210	12.55	292.52	124 01	26.10	107 60	257.71	34.81
Ancon	Dec. 10	1,879,520		1,879,520	13.55	11,369.42	4,463.86	939.76	716.54	6,120.16	5,249.26
Cristobal	Dec. 25	2,310,550		2,310,550	63.84	16,268 80	5,487.56	1,155 27	162.25	6,805.08	9,463.72
Cristobal	Dec. 25				8.56						
Cristobal	Dec. 25				13.70						
	1910.										
Ancon	Jan. 16	493,000	1,179,600	1,672,600	13.30	9,931.06	3,972.43	836.30	68.32	4,877.05	5,054.01
Cristobal	Jan. 29	1,214,086	963,646	2,177,732	17.20 n.t.	18,728.50	5,444.33	1,146.17	293.20	6,883.70	11,844.80
Panama	Feb. 9	357,300		357,300	13.51	2,154.97	848.59	178.65	94.25	1,121.49	1,033.48
Ancon	Feb. 21	1,121,816	919,334	2,041,150	11.36	10,351.56	4,916.01	1,034.95	1,022.19	6,973.15	3,378.40
Cristobal	Mar. 4	1,423,157	1,064,879	2,488.036	13.05	14,495.03	5,909.08	1,244.02	382.17	7,535.27	6,959.76
Ancon	Mar. 25	45,280		45,280	23.40	473.01	107.54	22.64	14.66	144.84	328.17
Cristobal	April 2	141,245		144,245	13.06	841.00	342.59	72.12	38.59	453.30	387.70
Ancon	April 25	1,253,087	449,014	1,702,101	10.29	7,984.70	4,182.61	880.55	256.79	5,319.95	2,664.75
Ancon	April 25	43,436	15,564	59,000	6.29						
Cristobal	May 4	1,240,226		1,240,226	11 07	6,129.15	2,945.54	620.11	153.26	3,718.91	2,410.24
Ancon	May 26	751,251	350,199	1,101,450	10.29	5,059.79	2,615.94	550.72	101.59	(3,268.25	1,864.42
Ancon	May 26	(brass) 845		845	.08625 lb	72.88					
Cristobal	June 5	1,216,474	277,415	1,493,889	10.33	7,715.94	3,547.98	746.95	198.51	4,493.44	3,222.50
Ancon	June 27	77,414	102,536	179,950	7.11	12,588.49	6,912.08	1,455.18	200.25	8,567.51	4,020.98
Ancon	June 27	758,357	1,004,443	1,762,800	10.27						
Ancon	June 27	416.262	551,338	967,600	9.11						
Cristobal	July 7	701,589	1,478,612	2,180,201	10.0175	9,794.79	5,177.98	1,090.98	371.31	6,639 39	3,155.40
Panama	July 6		206,000	206,000	11.36	1,044.71	489.25	103.00	30.25	622.50	422.21
Ancon	July 27	310,900	363,650	674,550	11.30	3,402.86	1,602.06	337.27	120.25	2,059.58	1,343.28
Cristobal	Aug. 10	255,434	1,308,766	1,564,200	10.45	7,297.27	3,714.98	782.10	200.25	4,697.33	2,599.94
Allianca	Aug. 4		408,400	408,400	10.29	1,876.09	969.95	204.20	59.25	1,233.40	642.69
*Wotan	Aug. 15	1,112,540		1.112,540	10.13	5,040.00	1,490.00	(To Frisco)		1,490.00	3,550.00
Ancon	Aug. 26	396,482	825,718	1,222,200	10.55	5,756.34	2,902.72	611.10	180.25	3,694.07	2,062.27
Cristobal	Sept. 8	537,284	2,179,016	2,716,300	10.60	12,866.05	6,451.21	1,358.15	199.07	8,008.43	4,857.62
Ancon	Sept. 26	773,478	1,770,022	2,543,500	9.81	11,139.17	6,040.81	1,271.75	223.82	7,536.38	3,602.79
Cristobal	Oct. 10	1,017,520	1,048,930	2,066,450	9.36	8,634.81	4,907.83	1,033.22	220.25	6,161.30	2,473.51
Cristobal	Nov. 19	115,748	643,752	759,500	10.42	3,533.03	1,139.25	379.75	80.25	1,599.25	1,933.78
Ancon	Dec. 4	455,780	876,520	1,332,300	10.53	6,263.00	1,998.45	666.15	142.24	2,806.84	3,456.16
Cristobal	Dec. 16	336,715	1,135,585	1,472,300	10.83	7,118.31	2,208.45	736.15	258.99	3,203.59	3,914.72
Ancon	Dec. 28	391,577	98,323	489,900	9.31	2,036.15	734.85	244.95	100.50	1,080.30	955.85
	1911.										
Mills	Feb. 20	2,061,534	2,188,176	4,249,710	13.61	25,820.78	5,691.58		1,042.31	6,733.89	19,086.89
Lyra	Mar. 7	2,024,028	1,149,922	3,173,950	12.87	18,236.04	4,250.82		1,962.89	6,213.71	12,022.33
Cristobal	Mar. 23	402,768	38,332	441,100	9.52	1,874.68	661.65	220.55	110.25	992.45	882.23
San Mateo	Apr. 7	115,275	1,275,255	1,390,530	10.11	6,276.01	1,862.32		42.36	1,904.68	4,371.33
Ancon	Apr. 20	381,222	29,578	410,800	10.17	1,865.11	616.20	205 40	40.25	861.85	1,003.26
Prinz August Wilhelm	May 23	44.000	216,400	260,400	9.58	1,113.68	348.75		60.25	409.00	704.68
Lyra	May 26	2,106,160	2,353,080	4,459,240	10.67	21,241.11	5,972.20		1,326.56	7,298.76	13,942.35
Lewis Luckenbach	June 21	1,380,600	731,300	2,111,900	11.17	10,531.22	2,828.44		1,547.15	4,375.59	6,155.63
Prinz August Wilhelm	June 28		339,800	339,800	10.20	1,547.30	455.09		60.25	515.34	1,031.96
Prinz August Wilhelm	July 18	97,600	140,000	237,600	10.87	1,153.00	318.21		40.25	358.46	794.54
Ancon	July 26	182,560	88,140	270,700	8.59	1,038.08	406.05	135.35	60.25	601.65	436.43
Prinz Joachim	Aug. 1	298,650	170,350	469,000	10.30	2,156.56	628.13		50.25	678.38	1,478.18
Prinz August Wilhelm	Aug. 15		267,600	267,600	9.81	1,171.94	358.39		30.25	388.64	783.30
Lewis Luckenbach	Aug. 21		86,560	86,560	10.25	396.09	129.84	43.28	9.98	183.10	212.99
Lewis Luckenbach	Oct. 16		1,243,667	1,243,667	10.05	5,579.85	1,865.50	621.83	19.28	2,506.61	3,073.24
(29,430.6277 gross tons)		36,385,184	29,539,422	65,924,606	$11.9508	$351,719.92	$132,498.27	$23,997.40	$13,408.40	$169,904 07	$181,815.85
Expense of assembling on the Isthmus, etc.										59,529 15	
										$229,433.22	$122,286 70

Expense of shipment and sale, per gross ton	$5.7730
Expense on Isthmus, per gross ton	2 0227
Total expense, per gross ton	7.7957
Net revenue, per gross ton	4.1551
Average sale price, per gross ton	$11.9508

	No. pounds.	Per cent.	Net revenue
French	36,385,184	55.1921	$67,492.60
American	29,539,422	44.8079	54,794.10
Total	65,924,605	100.0000	122,286.70

Removal of Special Masonry Work Used in Lock Gate Construction.

The concrete pedestals used to support the upper guard gates at Gatun Locks in the course of erection are to be removed. Allowing them to remain, for use in contingent repairs to the gates, was considered, but it was decided that the lodgment against them of the waterlogged timbers or other débris might result in interference with the operation of the gates. It was to obviate such difficulties that the large sumps, 144 feet long, 13⅓ feet deep, and of the full width of the lock chambers, were made between the emergency dam sills and the sills for the upper guard gates.

Concrete installed on the lock walls at Gatun, for the support of the construction bridge over the sites of three sets of gates, extends beyond the proper limits of the walls and is being cut away, in order to afford a proper bond of the finished coping. This relatively small task occupies considerable time, as work can be carried on only between 4.30 and 6.30 p. m., because of the danger to men working on the gates below.

COLON WATER SUPPLY.

Plans for New Waterworks and Purification Plant have been Approved.

Plans for a new water works and purification plant at Mount Hope, in connection with the improvement of the Colon water supply, have been approved by the Chairman, with a single exception, that of a tunnel designed to carry water from Gatun Lake. The preliminary work, consisting of clearing the site at Mount Hope, and of ordering the necessary material, is under way, and efforts are being made to the end that the pumping station and clear water basin may be available for use during the next dry season. The work of clearing the site involves the removal of houses Nos. 342 to 352, inclusive, and No. 819, together with a number of small shacks.

The plans, in general, as prepared in the drafting office of the division engineer at Gatun, contemplated the construction of a tunnel through the ridge separating the watershed of Gatun Lake from that of Brazos Brook, for a distance of approximately 600 feet, and at an elevation of 65 feet above sealevel, so that with the lake level at 70 feet, the supply of water would be ample. It was proposed to locate this tunnel at a point three miles east of Quebrancha, a siding on the Panama railroad relocation about two miles out of Gatun. In referring to this feature of the work, the Chairman stated that he regarded it objectionable; first, because of the uncertainty of the material through which the tunnel must pass, and the difficulties that would probably be encountered from slides; and, second, because of the undesirability of cutting this opening through the hills below the general lake level. He requested, however, that further consideration be given to this feature, and that a report be submitted giving alternate estimates of cost of construction and operation based on carrying a 20-inch pipe line over the divide in an open cut; also, whether or not there would be an appreciable difference in cost by raising the tunnel not more than 15 feet above the lake level. A crew of diamond drill runners is engaged in determining the character of the ground in the vicinity of the proposed tunnel, and a report of the findings will be made later. In connection with the construction of the tunnel, the plans called for the laying of a 20-inch main inside of it, so that the water from Gatun Lake could be carried into the Brazos Brook reservoir, and automatically controlled, in such a manner that the level of the reservoir would never fall below 48 feet above sealevel. Other work planned is the laying of a 20-inch main from the Brazos Brook headgate to Mount Hope; the construction of an aeration chamber, mixing box, and head house; sedimentation basin; filter building, including clear water well; and pump station. The filtration plant is to be the modern, rapid, mechanical gravity type, designed for a normal maximum capacity of approximately 6,000,000 gallons a day.

The plan is to first aerate the water in the aeration chamber, and then pass it through the mixing boxes, where an aluminum sulphate solution is to be applied, thence allowing it to flow into the sedimentation basin, where sedimentation for a period of eight hours will take place. From the sedimentation basin the water will pass into the gravity filters, thence discharging directly into a clear water basin, which will form the basement of the filter building. The water from this basin, which is to have a capacity of approximately 500,000 gallons, will then flow into sumps situated beneath the floor of the pumping station, immediately alongside of the filter plant, thence will be pumped by the steam pumps directly into the main which feeds the city of Colon.

It is purposed to install in the pump house the steam pump and boiler equipment in the present pumping station, using it to furnish water for all normal consumption. In addition, there will be installed two 3,000-gallon per minute centrifugal pumps, electrically driven, so arranged that by simply throwing the pumps into operation, by closing a switch, 6,000 gallons of water a minute can be delivered into the mains at a pressure, at the lower end of Colon, of 70 pounds to the square inch, and providing for from 15 to 18 streams of water in case of fire, it being planned to use these pumps only in times of fire. The steam pumps are so arranged as to pump automatically into the main the required amount of water to maintain pressure at all times, except during a fire, of approximately 45 pounds to the square inch, and, in case of the fire pumps being thrown on the line, the steam pumps will automatically close down; and with the throwing off of the main of the electric fire pumps, the steam pumps will automatically start up.

It is planned to construct the clear water basin and the power house, and to install the electrical fire pumps as soon as possible; also, to so arrange the present standpipe and steam pumps at Mount Hope that there will be available approximately 900,000 gallons of water for use, at high pressure, in case of a fire in the quantity of approximately 6,000 gallons a minute. The shortage of water at Colon during the past dry season, when the Brazos Brook reservoir practically went dry, and water had to be carried in barges to Cristobal from Gatun, or pumped from the Mindi River, itself an uncertain source of supply, makes an adequate and permanent store imperative for the next dry season. At the present time over 3,000,000 gallons of water each day is required for Cristobal and Colon, including wash water for the pressure filters. The new plant has been designed with a view of supplying, if necessary, twice this amount. The present pipe line between Brazos Brook and the plant at Mount Hope, with the reservoir at elevation 48 feet, would furnish the maximum amount needed for Colon at present, but future increases would require the laying of an additional pipe line.

The estimate of cost for the new filtration plant, exclusive of land, is about $18,000 per million gallons of filtered water capacity, and on the same basis, the original cost of the Agua Clara plant at Gatun was about $16,300. The difference between the cost per million gallons for Agua Clara, and the proposed plant, is accounted for by twice the length of the sedimentation and the aeration of the water, together with the fact that the foundation of the filter building at Mount Hope will be on piles. It is believed from past experience that thorough aeration of the water will result in an approximate saving of about 15 per cent of aluminum sulphate, or a saving, taking 6,000,000 gallons as a basis, of about $2 a day.

In drawing up the plans for the new plant, estimates were prepared of both the mechanical gravity and pressure type of filter plants. With a pressure plant, it is necessary to force the water through the filter at an approximate net pressure of 10 pounds to the square inch. The additional daily cost in fuel oil alone for this additional work, based on the present operation at Mount Hope, would amount, on 6,000,000 gallons a day, to $4,175 a year, or, based on the average of 3,000,000 gallons of water a day, with a plant having a maximum capacity of 6,000,000 gallons a day, the daily additional cost would be $8.58 a day, or $3,131.70 a year. This amount represents the saving to be effected by the mechanical gravity type, which would be practically eight per cent on the additional investment.

Swimming Pool on Colon Beach Closed Temporarily.

The operations of the municipal engineering department of the Atlantic Division, in cleaning out the north end of the D street sewer, have made it necessary to close temporarily the swimming pool on Colon Beach, near the residence of the General Superintendent of the Panama railroad. It will probably be closed the greater part of a month.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending July 27:

DATE.	Hours worked.	Cubic Yards.
July 22	7.35	2,545
July 23	6.40	2,028
July 24	8.10	2,218
July 25	7.30	3,000
July 26	9.00	3,333
July 27	7.05	2,712
Total	46.00	15,836

Empire Christian League.

The Empire Christian League held a business meeting and social in the I. C. C. chapel, Wednesday evening, July 24, at which a musical and literary program was given. The semiannual election of officers resulted, as follows: President, H. A. A. Smith; vice-president, E. P. Beck; secretary-treasurer, E. H. Ash; chairman of music committee, H. W. Dormann; chairlady of special committee, Mrs. Phil Kelly. The report of the various departments showed the work to be in a healthy condition.

Verdict of Coroner's Jury.

The coroner's jury empaneled in the case of Luther McCullah, private, Company K, Tenth Infantry, Camp Otis, who was found dead at the Mandingo River bridge, near Bas Obispo, on the morning of July 16, has submitted findings to the effect that his death was caused by two gunshot wounds, one through the chest, and the other through the head, at the hand of person or persons unknown.

Sailing of the Ancon.

The departure of the steamship *Ancon* has been set for Tuesday, August 6, from Dock 11, at 3 p. m.

A supply of sanitary drinking cups has been received on the Isthmus and these are again provided free in the coaches of Panama railroad trains. They are placed in small cabinets on the wall at either end of each coach.

ANCON HOSPITAL GARDENS.

Microcosm of Trees and Plants that Grow in Panama.

A brief history and description of Ancon hospital gardens, together with a classified list of the trees and plants which had been catalogued up to that time, was published in The Canal Record of August 3, 1910. Since May, 1910, about 2,000 trees have been planted in the gardens, this number being divided approximately, as follows: Six hundred plantains, 600 bananas, 700 papayae and about 250 Royal palms. The present list contains the trees, plants and flowering bushes as catalogued up to date. The work of cataloguing and classifying has been greatly assisted by Prof. H. A. Pittier of the Bureau of Plant Industry, Department of Agriculture at Washington.

Plants and shrubs have been received at Ancon from Director Wilder of the Botanical Gardens at Honolulu, from the Director of Hope Gardens, Kingston, Jamaica, and from the Department of Agriculture in Washington, D. C. In 1911, Mr. Wilder visited the Isthmus and aided in the identification of some of the plants and trees.

The following list is revised from the list formerly published in The Canal Record, with the addition of several hundred specimens which have, since the publication, been classified and catalogued.

Palms—Wine palm (Acrocomia sclerocarpo vinifera); palm (Actinorhytis calloparia); Cogolillo palm (Astrocaryem polystachium); Sugar palm (Arenga saccharifera); Sago palm (Cycas revoluta); Sago palm (2) (Cycas circinalis); Fern palm (Caryota urens); Panama hat palm (Carludovica palmata); Porto Rican Royal palm (Oreodoxa Borinquena); Date palm (Phoenix dacty lifera); Fan palm (Prichardii pacifica); Palm Honolulu (Pritchardia gaudichaudi); Curly palm (Kentia belmoreana); Travelers' Tree (Ravenola Madagascariensis); Oil palm (Elaesis melancocca) Corogo Colvolo; Royal palm (Oredoxa regia); Cuba; Royal palm sp. (Oredoxa oleracea); Thatch palm (Thrinax parviflora); Thorny palm (Guiliema utilis) (Pison); Fan palm (Latania Borbonica): Palma real.

Fruits and Nuts—Mamey Sapote (Achras mamosa); Sapodilla (Achras sapota); ——— (Allamanda cathartica); Madrono de Comer (Alibertia edullis); Cashew (Anacardium occidentale); Anacardium rhinocarpus, espave, Anacardicease; Sour sop (Anona muricate); Sugar apple, custard apple (Anona squamosa); Aristotelia macqui); Chili); Custard apple (Anona reticulata. *Anonaceae*); Cocoanut (Cocos nucifera); Jock fruit (Artocarpus intergrifolia); Achote, Anatto (Bixa crellana); Coffee (Caffea Zanzabarensis); Palo Maria (Calophyllum calaba); Papaya(Carica papaya); Lime (citrus acida); Sweet orange (Citrus aurantium dulcis); Tangerine (Citrus dancy nobilis); Grapefruit (Citrus decumena); Lemon (Citrus limonum); Edible fig (Ficus carica); Cluster fig (Ficus sp.); Mangosteen (Garcimia mangostana); Plantain (Musa Paradiaca); Banana (Musa Sapientium); Avocado (Persea Gratissima); Guava (Paidium guava); Pomegranate (Punica granatum, *Myrtaceae*); Plum (Spondias edulis); Yellow plum, Hag plum (Spondias lutea); Red plum (Spondias purpurea, *Circuelo*); Bofug nut (Sterculia foetida, Philippines); Soap berry (Sapindas saponaria); Tamarind (Tamarindus Indica); Chocolate (Theobrom cacao); Vanilla chica (Selenipedium); ——— (Anona palustris) not edible; Marking nut (Semecarpus anacardium); Kafir orange (Strychnos spinosa, Africa) Mamey (Mamea Americana, *Guttiferae*); Guava real (Inga spectabilis); Macaws (Guadopalin, *Diphisa robinioidies*); Yam (Dioscorea alata); Kafir plum (Harpephyllum caffrum); Mango (Mangifera Indica, *Anocardioceae*); Klat, Arabia (Catha deulis); Medicine nut (Jatropba curas, *Euphorbiceae*).

Miscellaneous Trees, Plants and Roots—Rubber tree (Ficus elasticus); Indian rubber tree (Ficus Indica); Para rubber (Hevea, sp.); ——— (Eucalyptus botryoides); Silk oak, (Grevillea robusta); Guacimo (Guazuma ulmifolia); Cola (Cola acumuiata); Japanese bamboo (Bambusa argentea); ——— (Bambus arundinacea); Bastard teak (Butea frondosa); Ornamental ash (Phoenix reclinata); Rain tree (Pithecolobeum saman); Umbrella tree, Japanese varnish (Steranlia platonifolia); ——— (Yucca elephantipes); Mahogany (Swietonia mahogani); Teak wood (Tectona grandos); ——— (Pamdanus veitchii); Cassava (Manihot aipi, *Euphorbiceae*); Calabash (Cresentia cujete); Arrow root (Maranta arundinacea); Crow tree (Hermesias grandiceps);Sand box (Iluraxcrepitans, *Euphorbiceae*); Native rubber (Castilla panamensis); Camphora(; Snake wood (Cecropia palmata); Job's tears (Coix lacrymo Jobi); Jamaican Elder (Cedrela odorata); Soap berry (Sapindus saponaria); Ciruelo chino (Spondias dulcis, *Anocardioccae*); Dragon tree (Dracaena lindeni); Grape tree (Cocobolo, *uvifero*); ——— (Ficus altissima, *urticacae*); Bread fruit (Artocarpus incisa, *urticaeae*); Snake wood (Cecropis palmata, *Urticaeae*); Marango (Moringa oleifera); Algaroba (Hymenea courbaril).

Flowering Bushes and Plants—Sapote (Lucuma Mammosa, *Sapotaceae*); India Kale, Calocesias atrovikus (Xanthosoma); Spanish lily (Crinum evubesceur); Kirkie (Cavanillesis platanifolia, *Stereubiaceae*); ——— (Corozo galleraze, *Attalia gomphoese*); Australian pine (Casurarina, squisedifolia); ——— (Achras Ingesto, *Pittier*); ——— (Xanthosoma violaceum); Tree fern (Polypodium); Screw pine (Pandamus utilis); ——— (Chlorphora tinctoria, *Madusa Fustie*); ——— (Acalpha Mosiaca, *Euphoridcaeae*); Poroporo (Cochlospermum hibiscodes); Fustie (Chlorophora tinctoria, Machura tinctoria); Sterculiaeae (Cavanillesia plantanifolia); ——— (Calophyllum kunsterli longifolium); Bala (Gliricidia maculata); Bougainvillea (Glabra Sanderiana); ——— (Garcinia Xanthochyma); Gamboge (Garcinia morella); Cape jessamine (Gardenia Florida); "Jagua" (Genipa carute); Cacho de venado (Gilibertia arborea); ——— (Gynandropsis pentandra (Gilibertia arborea); ——— (Gynandropsis pentandra); Membrilla (Gustavia augustifolia); Coreza (Arabia guilfoylei); ——— (Arabia); Cerizo (Bunchosia glauea); Nance (Byreonima crassifolia); Cana fistala (Cassia leiantha); Mazano-Salamo (Calycophyllum candidissium); Otaheita gooseberry (Cacca disticha); Pito (Erythrina corallodendron); Pavilla (Didymopanax morototoni); Amaryllis lily (Hippeastrum equestre); ——— (Hibiscus rosa); Ginger lily (Hedychium coronarium); Yellow morning glory (Ipomoea tuba rosa); ——— (Ixora sp.); ——— (Jasminum gracillimum); Spanish jessamine (Jasminum grandiflorum); Hardy jessamine (Jasminum officianale); ———(Guacimo colorado, *Tilaceae*); ——— (Luhea rufescens); Crepe myrtle (Lagerstroemia Indica); Langsat, Java (Lansium domesticum); Anacimo blanco (Luebea sp.); ——— (Tabernaemontana coronaria); Red croton (Xanthosoma sp.); Malagueto grande (Xylopia grandiflora); ——— (Xanthosoma violaceum); (Indica kali-coloceasia); Agati (Sesbania grandiflora); Panama (Sterculia carthargesms); ——— (Plumbago capensis); ——— (Pentaclethana); Job de iguana (Phyllanthus sp. *euphorbiceae*); Lace plant (Pilea *urticaeae*); Cola (Cola acuminalta); Rose apple *myrthaceae* (Eugenia jambos); ——— (Biguonia); ——— (Erythrina sp.); Sangvillo (Croton panamensis) Poinsettia (Euphorbia pulcherrima); ——— (Pachira Barrigon); ——— (Panax excelsum); Spanish lily, white (Pancratium ovatum); ——— (Pachira macrocarpa); La Viuda (Petrosa volubilis, *verbenaceae*); ——— (Feijoa selloniana, Brazil); ——— (Panax plumatum); Frangi pani (plumeria); Cun de Amor (Momordica charantia); Acacia Farnesiana (Flor de Aroma); Century plant (Agave Americana); Coral vine (Antigonon leptopus, Cadena de Amor, *Bellissemia*); Laurel (Cordia gerascanthus); Coleus; Cola (cola Acumniata); Crotons (Codieaum variegatum); Cabbage tree (Andiva inermis); Cope Grande (Clusea rosea); Calladium; Canna; Rose apple, Hawaii (Caryophylus malaccensis); ——— (Clerodendron Balfouri); Pigeon pea (Caianus Indicus); Dwarf poinciana, *Gallito* (Caeaslpunia pulcherrima); Furcraea; Pink (Garcinia Livingstonei); Royal poinciana (Delouix regia); Suminam cherry (Eugenia uniflora, *mythaceae*); Loquat (Eriobotystia japonica); Fern sp. Glichenia); Moon flower (Iopnica bona nox); Sweet William (Ipomoea quamoclit); Henna (Lawsonia alba); Sensitive plant); (Mimosa pudica); Four o'clock (Mirabilis jalapa); Oleander (Nerinm); Spider lily, white (Pancicatium ovatum sp.);Maria (Thespesia populea); ——— (Tradescantia discolor); ——— (Vinca rosea); ——— (Zingiber officionale); Wandering Jew (Zabrina pendula); Chenille plant (Acalypha sanderi), Cado de venado (Gilbertia arborea); ——— (Jatropha aconitfolia); Snowflake, var. Rosea picta (Puallanthus nervoeus, *Euphorbiceae*); Biviba (Rollinia orthopotala, Brazil); Flamboyant Blaues (Bauhinia purpurea, *Leguminosoe*); Corteza (Apeiba Tobourou, *Tiliaceae*); ——— (Phyllanthus emblica, *euphobiceae*); ——— (Phyllanthus acuminatus, *euphorbiceae*): ——— (Duranta plumieri, *verbenaceae*); ——— (Cuscuta, *convolulacoe*); Corotu (Enterolobium cyclocarpym); ——— (Philodendrom); Coruntia pyramilata (Palo cuadrodo); Dancy (Cytharexylum candatum, *verbenaceae*); Leaf of Life, Leaf of the Air (Bryophyllum calycinum, *crassolaceae*); ——— (Foijoa sellowiana, Brazil); ——— (Pachira Barrigon); China berry (Melia Azedarach); ——— (Murrya exotica); (——— Myroxylon); Dragon's eye, China (Nephelium longana Myroxylon); Dragon's eye, China (Nephelium longana); ——— (Piper cordoncilla); ——— (Phyllanthus acuminatus); ——— (Pentoclethra); ——— (Paico), ——— (Pachira macrocarpa); ——— (Pachira fendleri); ——— (Ordinancia); ——— (Ocotca): ——— (Rheo bicolor); (Rhinacanthus nasutus); Biniba (Rillimis orthopotala, Brazil); ——— (Schizolobium excelsium); ——— (sapium Mortizium); ——— (Strychnos nux vomica); ——— (Thevetia nitida); ——— (Thrichilia); ——— (Visiia panamensis); ——— (Vinca rosea); ——— (Vernonia); Red Croton (Xanthoseoma sp.); Malagueto grande (Xylopia grandiflora); Star apple (Phrysophillum Caimito); Grendilla (Passiflora quadrangularis); Fabaceae, East Indies (Agati grandiflora); Four winged bean, Saguidillas (Botor tetragonoloba, *Fabaceae*); Calladium colocasia, Taro (Calocasis esculentum, *Araceae*); (Didymopanax morototoni); Pito (Erythrina colallodendron); Rubiaceae, native (Hamelia patens); ——— (Lantana camara, *Verbenaceae*); ——— (Philodendron, *Aroideae*) Tube rose (Poliantheas pancratium tuberosa, *Lilliacee*); (Thevetia nerifolia, *Apocyneae*); Indian kale (Xanthosoma atrovirens, *Araceae*); Zepher lily (Zephyranthes. amaryllis rosea, *Lilliaceae*); Psidium guava, *myrthaceae*.

Fabaceae, East Indies (Agati grandiflora) Four winged bean, Saguidillas (Botor tetragonoloba, *Fabaceae*); 'Calladium colocasia, Taro (Colocasis esculentum, *Araceae*); (Didymopanax morototoni); Pito, Erythrina colallodendron); ——— (Lantana camara, *Verbenaceae*);——— (Philodendron, *Aroideae*); Tube rose (Polianthes pancratium tuberosa, *Lilliaceae*); (Thevetia nerifolia, *Apocyneae*); Indian kale (Xanthosoma atrovirens, *Araceae*); Zepher lily (Zephyranthes, amaryllis rosea, *Lilliaceae*); Psidium guave *Myrtaceae*.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 90 per cent completed, 203,593 cubic yards, out of a total of 225,000, having been placed at the close of work on July 27. A statement of the amount laid each working day last week, and of the total in place, follows:

Date.	Concrete Laid.	Hours worked.	No. Mixers.
July 22	36	4.00	1
July 23	28	6.00	1
July 24	96	7.75	1
July 25	40	5.00	1
July 26	30	5.00	1
July 27	68	5.00	2
Total	298	33 15	1 17
Previously reported	203,295		
Grand total	203,593		

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 7, 1912, (75th meridian time):

Date.	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.
August 1		5.40	11.55	5.50
August 2	12.10	6.12	12.28	6.23
August 3	12.43	6.44	1.06	6.57
August 4	1.17	7.20	1.44	7.35
August 5	1.56	7.59	2.28	8.18
August 6	2.38	8.43	3.18	9.10
August 7	3.31	9.37	4.17	10.12

Band Concert.

A band concert will be given by the Isthmian Canal Commission Band at Gorgona, C. Z., Sunday, August 4, 1912, at 6 p. m. The program follows:

1. March—*From Ocean to Ocean via Panama*. Murphy
2. Selection—*The Pink Lady* (by request)....Caryl
3. Intermezzo—*After Sunset*..................Pryor
4. Overture—*Hungarian Lustspiel*.......Keler Bela
5. (*a*)—*Everybody's Doing It*..................Berlin
   (*b*)—*Hulo, Hulo*.........................Wenrich
6. Grand fantasie—*Home, Sweet Home, the World Over*..........Lampe

   Note.—In this selection the composer describes in the various movements how "Home, Sweet Home" might be presented when adapted to the music of different countries. First, we have the melody as originally written; second, it comes in the form of the landler of Germany; third, the valse of Spain; fourth, the polacca of Russia; fifth, the aria of Italy; sixth, the strathspey of Scotland; seventh, the czardas of Hungary; eighth, an imitation of Chinese music; ninth, the jig of Ireland, and lastly the rag of the United States.
7. Tango—*El Mimito*..................Villanneva
8. Medley selection—*Remick's Late Hits*....Lampe
9. March—*Niebelungen*..................Wagner

Charles E. Jennings, *Musical Director*.

The next concert will be given at Pedro Miguel, Sunday, August 11, at 4.30 p. m.

OFFICIAL CIRCULARS.

Oxygen and Acetylene Gas Tanks.

CULEBRA, C. Z., July 20, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

All employes having occasion to use or handle tanks containing compressed oxygen and acetylene gas are directed to see that all valves are tightly closed before shipping same, regardless of whether they are empty or not. It is further directed that acetylene gas be not drawn from tanks to a pressure below ten (10) pounds, as when the pressure is reduced below this point the acetone passes off with the acetylene gas and an insufficient amount of acetone in tank is liable to cause an explosion.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Organization Statements.

CULEBRA, C. Z., July 23, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

I am directed by the President to furnish the Commission on Economy and Efficiency a statement of the organization of the various departments and divisions of the Commission, in the form attached hereto.

The organization used should be the authorized organization of June 30, 1912, and this should also be used by you in preparing your detailed estimates for the fiscal year 1914. In preparing these statements, please use the same size paper as that used for the Annual Report, forwarding four copies to this office.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

[SPECIMEN]

.... DEPARTMENT OR DIVISION.

Transportation:		
Superintendent	1	4,200.00
Superintendent, Asst	1	3,300.00
Dispatcher, Chief	1	2,700.00
Boys	2	171 36
Checker	1	480 00
Clerk	1	900.00
Clerk	1	750.00
Clerk	1	720.00
Clerks	12	600.00
Clerk	1	450.00
Clerks	2	360.00
Coalmen	28	300.00

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal, Colon, and Balboa, during the two weeks ending July 27:

Cuzco, July 13, from Bellingham Bay, with 18,000 feet, board measure, lumber, 100 tons oats, for stock.

Carrillo, July 14, from New York, with 165 pieces car couplers, for Mechanical Division; 63 packages, plates and fittings, 45 cases castings, for superintendent of erection; 11 cases vises, 113 cases water coolers, 25 crates galvanized buckets, for stock.

Wanderer, July 14, from Liverpool, with 3 lengths steel cable, for Pacific Division.

Prinz Eitel Friedrich, July 15, from New York, with 100 bales oakum, for stock.

Allianca, July 15, from New York, with 50 crates stoves, 175 coils wire, 100 pieces steel plates, 20 crates handles 10 cases paint, 42 cases pipe-fittings 10 cases paint, 14 drums lime, 26 cases babbitt metal, 7 reels wire rope, for stock; 170 cases crane parts, 50 cases transil oil, 16 crates steel lathe, 70 pieces beams and angles, for Panama Railroad Company, 7 barrels repair parts, for Atlantic Division; 25 cases rubber boots, 150 cases helical springs, for Pacific Division; 202 bundles steel bars, 1,248 pieces steel bars for Division of Fortifications; 13 cases fire brick, for Mechanical Division; 75 kegs green soap, for Sanitary Department; 20 cases castings, for superintendent of erection; 54 cases electric elevator, for Subsistence Department, and a miscellaneous cargo, the whole consisting of 2,580 packages weighing 460 tons.

Navajo, July 16, from Aberdeen, Washington, with 58,984 pieces douglas fir lumber, for stock.

Mathilda, July 16, from Norfolk, with 2,000 cases dynamite, for stock.

Santa Marta, July 17 from New York, with 2 cases electrical material, for Pacific Division.

Horsely, July 18, from New York, with 182 cases blasting caps, 225 drums gasoline, for stock; 121,620 bags cement, for Pacific Division.

Atenas, July 18, from New Orleans, with 131 pieces piling, 11,714 pieces, lumber, 566 drums kerosene, 109 packages hand cars, 28 packages castings, for stock; 5,840 pieces lumber, for Mechanical Division; 318 bundles castings, for superintendent of erection.

Portland, July 19, from San Francisco, with 4 drums carbon bisulphide, for stock.

Turrialba, July 21, from New York, with 487 pieces steel rail, 9 cases paint, 8 cases electrical material, for stock; 14 cases wire, for Mechanical Division.

Colon, July 22, from New York, with 150 cases coil springs, 10_only fire plugs, for Pacific Division; 20 packages car couplers, 30 kegs dioxide, 44 bundles car castings, for Mechanical Division; 30 cases castings for superindendent of erection; 12,000 pieces hollow tile, 9 cases boilers 100 barrels castings, for Panama Railroad Company; 30 cases drugs and sundries, for Sanitary Department; 9 bales manila rope, 15 pieces steel plates, 62 cases water meters, 28 cases rubber hose, 40 reels steel rope, 100 pieces castings, 910 kegs wire nails, 188 kegs rivets, 60 cases oils, 20 barrels shellac, 32 bales life preservers, 20 cases plumbing fixtures, for stock; and a miscellaneous cargo, the whole consisting of 15,134 packages, weighing 465 tons.

Prinz August Wilhelm, July 22, from New York, with 9 bundles springs, for Mechanical Division; 9 cases paper, 24 barrels coal tar, for stock.

Metapan, July 24, from New York, with 283 bundles steel bars, for Pacific Division; 151 packages electrical material, for Mechanical Division; 1,957 pieces iron pipe, for stock.

Californian, July 25, from Liverpool, with 200 barrels carbolic acid, for stock.

Parismina, July 25, from New Orleans, with 525 tons pig iron, 7,273 pieces lumber, 2,839 pieces lumber, for Mechanical Division; 202 pieces piling, 25 cases paint, 14 rolls cotton duck, 181 cases window glass, 950 cases fire brick, 1,354 pieces sewer pipe, 335 barrels oils and greases, for stock.

Ancon, July 26, from New York, with 124,360 bags cement, for Atlantic and Pacific Divisions; 130 packages hand trucks, 84 cases wire cloth, 15 pieces steel plates, for stock; 100 barrels castings, for Panama Railroad Company; 522 bundles steel bars, for Pacific Division.

Rainfall from July 1 to 27, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	3.00	16	9.11
Balboa	3.31	16	8.70
*Miraflores	1.87	17	7.09
Pedro Miguel	2.15	24	9.29
Rio Grande	1.25	16	6.72
Central Section—			
Culebra	1.38	16	7.56
*Camacho	1.58	17	8.01
Empire	1.38	16	6.72
Gamboa	3.45	16	13.05
*Juan Mina	2.22	17	7.92
Alhajuela	2.34	1	8.76
*El Vigia	2.78	2	12.07
*Gorgona	3.65	17	9.39
*Frijoles	1.98	17	8.56
*Monte Lirio	2.50	17	9.90
Atlantic Section—			
Gatun	2.31	16	10.09
*Brazos Brook	6.15	17	15.45
Colon	2.99	17	11.70
Porto Bello*	3.49	16	†18.53

*Standard rain gage—readings at 5 p. m., daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., July 26.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, July 27, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia	Alhajuela	Gamboa	Gatun Lake
Sun., July 21	128.4	94.4	49 6	31.6
Mon., July 22	127.0	93.4	46 5	31.6
Tues., July 23	126.4	92.9	45.3	31.5
Wed., July 24	126.2	92.8	45.2	31.4
Thurs. July 25	126.1	92.6	45.0	31.2
Fri., July 26	126.0	92.4	44.6	31.2
Sat., July 27	125.8	92.4	44 4	31 0
Height of low water to the nearest foot	125.0	91.0	44.0	

Sale of Public Buildings at Nombre de Dios.

OFFICE OF THE CHIEF QUARTERMASTER,

CULEBRA, C. Z., July 19, 1912.

Sealed proposals will be received at this office until 3 p. m., Monday, August 19, 1912, and then opened, for the purchase of any or all buildings, including plumbing, owned by the Commission at Nombre de Dios. List of buildings and full information will be furnished upon application to any district quartermaster, or to this office. Proposals must be accompanied by five per centum (5%) of amount bid. Envelopes containing proposals should be endorsed "Proposal for purchase of buildings," and addressed to Colonel C. A. DEVOL, Chief Quartermaster, Culebra, C. Z.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

CULEBRA.

A local bigpin bowling tournament will start this week.

The class in Spanish that has been held for the past 10 weeks will be continued for another term of similar length, with nine members. If there are any persons in Culebra who would like to join the class, their names may be left at the secretary's desk. The class meets on Saturday evenings from 7 to 8 o'clock.

The Gatun chess club played the Culebra club on Saturday evening, July 27, with the following results:

Gatun.	Won.	Lost.	Culebra.	Won.	Lost.
Stewart		2	Dubois	2	....
Rollock		2	Meiner	2	....
Gartrell	1	1	Warner	1	1
Zimmerman	1	1	Newman	1	1
Shropshire		2	Thompson	2	....
Total	2	8		8	2

During the week, three games of volleyball were played between contesting teams, as follows: Blues vs. Reds; Whites vs. Reds; Blues vs. Whites. The standing is, as follows:

Team.	Won.	Lost.	P. C.
Blues	12	8	.600
Reds	11	9	.550
Whites	7	13	.350

Three more games will be played this week.

EMPIRE.

The standing of the local tenpin bowling league is, as follows:

Team.	Won.	Lost.
Independents	12	6
Socialists	10	8
Democrats	9	9
Suffragettes	7	11
Progressives	7	11

Games will be bowled on Monday, Wednesday, and Friday nights of each week until the tournament is closed.

The standing of the local basketball tournament to date is, as follows:

Team.	Won.	Lost.
Germans	1	1
English	1	1
Americans	1	1

League games will be played Tuesday and Friday nights of this week.

The barber shop has been reopened.

The usual Sunday evening song service will be held on August 4, at 8.30 o'clock.

GATUN.

Pictures of the participants in the comic opera "Singbad, the sailor," which were taken at the last performance, are on sale at the clubhouse at 50 cents each.

Mr. C. E. Vierbuchen won first prize in the local individual duckpin tournament which was held this month. He will receive a gold medal.

Crsitobal and Gatun broke even in a match game of duckpins and tenpins held at the Gatun clubhouse on July 27. Scores:

Duckpins.

Gatun..... 422 440 452 Cristobal.. 435 457 431

Tenpins.

Gatun..... 805 858 833 Cristobal... 862 769 722

The 100, or over, duckpin scores for the week ending July 27, are: Vierbuchen, 111; Huttlemaier, 111, 100, 112, 109, 105, 100; Mack, 105; Claherty, 100; Martin, 100.

New pool and billiard cloths have been ordered.

A local tenpin tournament was started on July 29. There are 10 teams entered, and each team is named after a state. Music will be furnished several evenings each week by the Gatun mandolin and guitar club.

Louis DePoorter defeated all comers in a recent tournament, held under the auspices of the Camp Elliott association.

CRISTOBAL.

Twenty of the prospective basketball players were out to a hard practice on Wednesday night, July 24. A number of men from Mount Hope had organized, challenged all comers, and won a game against their opponents. Preliminary steps were taken for the organization of a local league during the month of August.

On Thursday night, the Oriental Trio gave a sleight-of-hand entertainment. The company is composed of Hindoos.

At a meeting of the committee of five, selected by the various basketball players, it was decided to organize a three-team league. Each player is to vote for three captains, who are to choose the members of their teams from the available material. The three-team league is to start August 1, or not later than August 6.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning August 1, 1912:

FRESH MEATS.	Price.
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Plate, per pound	9
Corned, No. 1, per pound	14
Corned, No. 2, per pound	12
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	15
Rib roast, second cut (not under 3½ pounds,) per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	25
Venison (Imported), Stew, per pound	6
Forequarter (not under 6½ pounds), per pound	9
Rack (not under 5½ pounds), per pound	20
Saddle (not under 7½ lbs.), per pound	20
Leg (not under 9 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24

MISCELLANEOUS.	
Caviar, Russian in ¼-lb. jars, jar	89
Livers—Beef, per pound	11
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	13
Devonshire Farm, per pound	19
Sweetbreads—Beef, per pound	25
Eggs, fresh, dozen	27
one-half dozen only	14
Bluefish, per pound	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	†16
Fluke, fresh, per pound	10
Shads, fresh, each	50
Roes, shad, pair	25

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	†1.40
Fancy roasting, milk fed, med., each	†1.10
Fancy roasting, corn fed, about 5½ pounds each	†1.15
Fancy roasting, corn fed, about 4½ pounds, each	†1.00
Fowls, each ††60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.35
Hens, milk fed, for roasting, about 3 pounds each	50
Broilers, milk fed, each	70
Broilers, corn fed, each	60
Turkeys, per pound	23
Squabs, each	35
Capons, each	2.10
Ducks, teal, per pair	50
Ducks, Blackhead, pair	60
Partridges, pair	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30

CURED AND PICKLED MEATS.	Price.
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	21
Half, for boiling, per pound	22
Boiled, per pound	28
Hocks, per pound	?8
Beef, salt, family, per pound	12
Bacon—Breakfast, whole piece, per pound	23
sliced, per pound	24
Pork, salt, family, per pound	13
Ox tongues, each	1.00
Pigs'feet, per pound	9
Tongues, per pound	18

DAIRY PRODUCTS.	
Butter—Creamery, special, per pound	38
Sheffield Farms, extra, fancy per lb.	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	22
Swiss, per pound	28
Edam, each	1.00
Parmesan, lb.	35
Neufchatel, cake	6
Gouda, per pound	34
Snappy, cake	10
Milk (Certified), per bottle	**20
Butter, bottle	**15
Fer-mil-lac, bottle	**20
Ice cream, quart	?25
½-gallon	?50

VEGETABLES AND FRUITS.	
Beets, per pound	5
Celery, per head	*10
Cabbage, per pound	4
Cucumbers, per pound	5
Carrots, per pound	5
Cauliflower, per pound	15
Lettuce, per pound	10
Onions, per pound	4
Potatoes, white, per pound	3½
sweet, per pound	3
Rhubarb, per pound	4
Squash, per pound	5
Turnips, per pound	4
Tomatoes, per pound	5
Yucca, per pound	3
Yams, per pound	3
Apples, per pound	10
Canteloupes, each	8
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Plums, per pound	10
Oranges, Jamaica, per dozen	12
Pineapples, each	10
Watermelons, each	*30
Peaches, per pound	8

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

††Fowls weigh each about as follows: 3, 3½, 4, 4½ and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight, is supplied and refund note sent for difference.

?Sold only from commissaries; no orders taken for delivery.

Misdirected Letters.

ANCON, C. Z., July 31, 1912.

The following insufficiently addressed letters, originating in the United States, and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Arden, Mrs. Margaret
Cardoze, Mr. M. D.
Conlin, Carl (2nd class)
Corwin, Dexte
Falkner, S. R.
George, Mrs. Arthur
Gonstone, Mrs. A. J.
Griffin, J. J.
Hartenstine, Charles
Hill, Iver G.
Hingle, Alex
Johnson, Roy H.
Jones, A. N.
Keeling, Abner
Leonard, Mrs. Mary
Mitchell, M. D.
Mullegan, Miss Lena
Owyang, King
Robinson, Burnie
Roldan, Antonio R.
Roy, M. J.
Smith, H. C.
Staggs, W. E.
Stuart, Arthur
Thompsen, Mrs. C. G.
Thompson, David
Vreeland, Mrs. Etta
Wallace, J. T.

LETTERS UNCALLED FOR JULY 24, 1912.

Beresford, George
Brackney, Paul
Brenno, Mrs. H.
Briggs, Thornton
Busch, August
Church, Mrs. Edward
Connerly, B. E. (pkg.)
Crane, Sergt. Marrit
Davenport, H. G.
Dinsmore, Jim
Doran, J. H.
Gibbs, Webb L.
Gittens, Arthur L. (book)
Gorman, Miss M. A. (2 cl)
Granten, S.H.
Guill, H. Gonzalez
Guthrie, G. R.
Hearne, Mrs. J. W.
Hartenstein, Charlie
Hoffman, Geo.
Johnson, G.
Lichty, Mrs. Theo.
Lopez, Dr. A.
Martinez, Anselmo
Maxwell, L. H.
Mayne, Mrs. Olie
Means, Geo.
Melgard, Julius
Oxford, S. R.
Patterson, R. W. 3
Pelton, Henry
Ploughwright, Geo.
Robinson, Burnie
Rose, Capt. W. H.
Schade, Rev. Aug. E.
Simpson, Major Wendel
Weeks, Dr. Thomas E.
Westcott, F. M.

Sale of Lumber at Public Auction at Porto Bello.

OFFICE OF THE CHIEF QUARTERMASTER,
CULEBRA, C. Z., July 20, 1912.

There will be sold at public auction, by the district quartermaster at Porto Bello, at his office, at 2 p. m., Monday, August 5, 1912, to the highest bidder for cash, the following Isthmian Canal Commission property: 15,000 feet, board measure, lumber, second hand, The Government reserves the right to accept or reject any or all bids. For further information apply to the district quartermaster, Porto Bello.

C. A. DEVOL, *Chief Quartermaster.*

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Panama	P. R. R.	Saturday	July	27
Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21
Allianca	P.R.R.	Tuesday	Aug.	27
Colon	P. R. R.	Tuesday	Sept.	3
Advance	P. R. R.	Monday	Sept.	9
Panama	P. R. R.	Saturday	Sept.	14
Allianca	P. R. R.	Friday	Sept.	20

CRISTOBAL TO NEW YORK.

Advance	P. R. R.	Saturday	Aug.	3
Panama	P. R. R.	Friday	Aug.	9
Allianca	P. R. R.	Thursday	Aug.	15
Colon	P. R. R.	Wednesday	Aug.	21
Advance	P.R.R.	Tuesday	Aug.	27
Panama	P. R. R.	Tuesday	Sept.	3
Allianca	P. R. R.	Sunday	Sept.	8
Colon	P. R. R.	Sunday	Sept.	15
Advance	P. R. R.	Saturday	Sept.	21
Panama	P. R. R.	Friday	Sept.	27
Allianca	P. R. R.	Thursday	Oct.	3

NEW YORK TO COLON.

Zacapa	U. F. C.	Wednesday	July	24
Prinz Joachim	H.-A.	Saturday	July	27
Almirante	U. F. C.	Wednesday	July	31
Carrillo	U. F. C.	Saturday	Aug.	3
Prinz Eitel Friedrich	H.-A.	Saturday	Aug.	3
Clyde	R. M.	Saturday	Aug.	3
Santa Marta	U. F. C.	Wednesday	Aug.	7
Turrialba	U. F. C.	Saturday	Aug.	10
Prinz August Wilhelm	H.-A.	Saturday	Aug.	10
Metapan	U. F. C.	Wednesday	Aug.	14
Oruba	R. M.	Saturday	Aug.	17
Prinz Sigismund	H.-A.	Saturday	Aug.	17
Tivives	U. F. C.	Saturday	Aug.	17
Zacapa	U. F. C.	Wednesday	Aug.	21
Prinz Joachim	H.-A.	Saturday	Aug.	24
Thames	R. M.	Saturday	Aug.	31

COLON TO NEW YORK.

Metapan	U. F. C.	Thursday	Aug	1
Prinz Sigismund	H.-A.	Monday	Aug.	5
Oruba	R. M.	Tuesday	Aug.	6
Tivives	U. F. C.	Tuesday	Aug.	6
Zacapa	U. F. C.	Thursday	Aug.	8
Prinz Joachim	H.-A.	Monday	Aug.	12
Almirante	U. F. C.	Thursday	Aug.	15
Prinz Eitel Friedrich	H.-A.	Monday	Aug.	19
Thames	R. M.	Tuesday	Aug.	20
Carrillo	U. F. C.	Tuesday	Aug.	20
Santa Marta	U. F. C.	Thursday	Aug.	22
Prinz Sigismund	H.-A.	Monday	Sept.	2
Trent	R. M.	Tuesday	Sept.	3

NEW ORLEANS TO COLON.

Atenas	U. F. C.	Saturday	Aug.	3
Orleanian	U. F. C.	Wednesday	Aug.	7
Parismina	U. F. C.	Saturday	Aug.	10
Abangarez	U. F. C.	Saturday	Aug.	17

COLON TO NEW ORLEANS.

Parismina	U. F. C.	Thursday	Aug.	1
Abangarez	U. F. C.	Thursday	Aug.	8
Atenas	U. F. C.	Thursday	Aug.	15
Orleanian	U. F. C.	Thursday	Aug.	15

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans, via Limon, on Thursdays, at 5. p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 5 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending July 27:

Arrivals—July 21, *Quito* from Guayaquil; July 22, *Guatemala*, from Callao; July 23, *Portland*, from San Francisco; July 25, *Huallaga*, from Callao; July 27, *Chile*, from Guayaquil.

Departures—July 22, *Urubamba*, to Callao; July 22, *Aysen*, to Valparaiso; July 23, *Manavi*, to Buenaventura; July 24, *City of Para*, to San Francisco; July 25, *Peru* (*P. S. N.*) to Guayaquil; July 27, *San Juan*, to San Francisco.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, AUGUST 7, 1912. No. 50.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Guard Gates Ready for Rise of Lake.

The upper guard gates in the east chamber of Gatun Locks were closed by the contractor on July 31, and are now ready to keep the waters of Gatun Lake from flowing into the lower levels of the locks. The same gate in the west chamber was closed on August 6. The only work remaining to be done on these leaves by the McClintic-Marshall Construction Company is the erection of the footwalk and hand rails on top, though a subcontractor, the Bitumastic Enamel Company, is engaged in applying its patented material to the inner surfaces. The First Division has reopened the gates for the purpose of making minor modifications of alignment and connections with the operating machinery, but this work is such that the gates can be closed on short notice. Erection of these leaves was begun on May 27, 1911.

The sluice gates in the ogee of Gatun Spillway dam, by which the elevation of the lake surface is controlled, were closed on July 27, after having been open since July 3. When the water had risen approximately two feet, the hull of pipeline suction dredge *No. 85*, which is being dismantled for shipment across the Isthmus, was slid on shipways, and the sluice gates were reopened on August 5, in order to leave the hull in the clear. When the hull has been taken apart, and some minor concrete work on the lake side of the ogee finished, the gates will again be closed.

Floating Pumping Plants for Locks.

Plans are being prepared for the construction of two floating pumping plants, one to be used at Gatun Locks, and the other at the Pedro Miguel and Miraflores locks, as auxiliaries to the pumping plants, which will be installed in the lock caissons for unwatering the various sumps. Each plant is to consist essentially of four motor-driven 20-inch centrifugal pumps, or their equivalent, for operation under heads varying from five to 50 feet at Gatun and Pedro Miguel, and from five to 70 feet at Miraflores, mounted on one or two barges. Construction equipment already on the Isthmus, in use, or in storage, will be utilized as far as possible in the plants, and investigation is being made of available material.

A description of the pumps and actuating motors to be installed in the locks was published in THE CANAL RECORD of February 21, 1912. It is intended to use the floating pumping plants to unwater the locks, when for any reason, it is not advisable to use the floating caisson to close the tailbay.

Planning Permanent Buildings.

Mr. Austin W. Lord, the architect employed by the Isthmian Canal Commission to prepare plans for the permanent buildings to be erected in the Canal Zone for the use of the maintenance and operation force of the Canal, sailed for the United States on August 6, after spending the time since July 10 on the Isthmus in preliminary investigation. During his stay, Mr. Lord made a careful study of the topography and other local conditions affecting the general design of the structures, and consulted with officials in charge of divisions for which permanent buildings are to be erected. With the information acquired, he will devise a scheme in which all of the permanent buildings from Toro Point to Taboga Island will be of prevailing style, probably a modification of the Spanish renaissance, with appropriate adaptation of adjacent landscape. He will draft at once preliminary sketches for the buildings on which it is desired to begin work first, and proceed with the development of the designs for the superstructures. During the construction, Mr. Lord will visit the Isthmus every two or three months, and an assistant, Mr. F. W. Reynolds, will be here continuously to supervise the work. Mr. Lord is senior member of the firm of Lord, Hewlett, and Tallant of New York, and head of the department of architecture in Columbia University.

Approach Walls at Pedro Miguel Lock.

The upper approach wall at Pedro Miguel Lock, extending 1,154 feet into the southern end of Culebra Cut from the upper end of the center wall proper, has been brought to full height throughout its entire length. The remainder of its construction will consist of filling with earth and rock the cells into which the interior of the wall was divided by counterforts, and placing the reinforced concrete decking. Each of the 78 cells is 15 feet wide by about 54 feet long and 62 feet deep, requiring about 1,800 cubic yards of filling, so that the total amount of earth and rock to be used for this purpose will be about 140,000 cubic yards. The decking will be of reinforced concrete, approximately six inches thick, covering the wall for its entire length and to its full width of 55 feet eight inches, between inner faces of side walls at coping.

The lower approach wall, which is to reach 1,200 feet into Miraflores Lake, has not been extended beyond the 950-foot length at which it was stopped on account of railway tracks which crossed its site, leading to the west side of the lock. The tracks have now been removed, and steamshovels are excavating the embankment with the view of completing the wall. The work on the wall at present consists of the erection of counterforts in the hollow interior, and filling with earth and rock. The original construction comprised the erection of two long monoliths, back to back, with vertical faces, and distinct stepping-in of the interior sides, so that the space between walls had a V-shaped appearance and was unobstructed through the length of the wall. The counterforts being built at intervals of 15 feet are to support the towing tracks on either side of the wall, They are designed to have a depth of six feet on a level with the top of the wall, and conform accordingly to to the stepped-in side on which they are erected. The return track will be supported on reinforced concrete. As the counterforts are completed the filling of the wall follows.

Operations at Pacific Entrance.

The output of the dredges, working in the Pacific entrance to the Canal, for the month of July, amounted to 399,229 cubic yards, of which 307,511 cubic yards were removed from the Canal prism, and the balance—91,818 cubic yards—were dredged from the site of the inner harbor, and from the channel in front of the sand dock. At the end of July, there remained to be taken out in the Pacific entrance by dredges a total of 4,472,181 cubic yards, which is about two-thirds of all the excavation remaining to be done within the limits of the Pacific Division. The channel is now completed from the sea end to the dike which separates it from the zone of hydraulic operations, a distance of about eight miles, to a minimum depth of 30 feet below mean tide. From the sea end of the channel to a point opposite the shipways, the original excavation has been finished for some time, while the remainder of the distance is to varying depths, but not less than 30 feet below mean tide in any part.

At the present time the work in the channel, in original excavation, north of the Panama railroad wharf, is largely confined to the west bank. This section is down to grade in places; at other points, there are rock patches to be removed, and the dredge *Corozal* is at work on these. Working at 40 feet, and below, in this class of material, the output is naturally curtailed, but the dredge loads a barge once on an average in every half hour. One day recently one of the *Corozal's* buckets scooped up a huge piece of rock weighing several tons, and carried it to the top tumbler. It was however, too large to be dumped, and it was forced out of the bucket and fell on the deck, fortunately without doing much damage beyond splitting the planking.

The *Marmot* is also working on the west bank to the depth of its ladder. The suction

NOTES OF PROGRESS.

(Continued.)

dredge *Culebra* is engaged in cleaning up the bottom out at sea, and the dipper dredge *Cardenas* is removing a rock patch also in the outer channel. The *Mole* is stationed temporarily at the Punta Chamé sand bed, relieving the *Gopher*, which is tied up for repairs. The *Badger* is making a cut in the mud spit in front of the office of the resident engineer, which is included in the excavation for the inner harbor. The digging here is comparatively easy, only a small amount of rock having been encountered to date. The transfer of pipeline dredge *No. 85* is in progress, and its crew was turned over to the Pacific Division last week. The services of the men will be utilized temporarily in reassembling the parts of the vessel, and in making some necessary changes.

CONCRETE WORK IN THE LOCKS.

Over 90 per cent of the concrete for the locks is in place, the amount at the close of work on August 3 being 3,885,396 cubic yards, out of a total of approximately 4,302,563. A total of 21,240 cubic yards of concrete was laid in the locks during the week ending August 3.

GATUN LOCKS.

About 95 per cent of the concrete for the system of three twin locks at Gatun has been laid the amount in place at the close of work on August 3 being 1,889,709 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day of the week ending August 3, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
July 29	202	3.22	2					202
July 30	212	3.28	2					212
July 31	332	5.32	2					332
August 1	410	6.42	2					410
August 2	390	6.33	3					390
August 3	254	5.16	3					254
*Portable mixer				13				13
Total	1,800	30.53	2.33	13				1,813
Previously reported								1,887,896
Grand total								1,889,709

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 97 per cent completed, 871,105 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on August 3. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
July 29	112	3.50	1	211	18.00	3		323
July 30	156	4.00	1	161	23.50	4		317
July 31	140	3.50	1	224	31.50	4		426
August 1	114½	3.50	1	195	23.50	3		309
August 2	84	2.50	1	112	16.00	3		196
August 3	228	9.00	1	144	15.50	3		372
Total	834	26.00	1	1,047	128.00	3.33		1,943*
Previously reported							4,493	869,162
Grand total							4,493	871,105

*Includes 62 cubic yards mixed by hand.

MIRAFLORES LOCKS.

Over 78 per cent of the concrete for the system of two twin locks at Miraflores was in place August 3, the total amount on that date being 1,124,582 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
July 29	1,092	43.83	6	1,182	17.92	2	511	56.00	7		2,785
July 30	1,048	48.42	7	1,280	18–33	2	353	45.00	6		2,681
July 31	1,104	49.33	7	1,440	20.58	2	370	39.50	6		2,914
August 1	1,252	48.00	7	1,274	18.00	2	313	33.50	5		2,839
August 2	1,106	35.50	7	1,346	17.00	2	485	51.00	8		2,937
August 3	1,268	35.50	7	1,486	19.00	2	574	67.00	8		3,328
Total	6,870	260.58	6.83	8,008	110.83	2	2,606	292.00	6.83		17,484
Previously reported										3,963	1,107,098
Grand total										3,693	1,124,582

STEAMSHOVEL RECORDS.

Work of Central Division Machines During the Month of July.

During the month of July, the total amount of material excavated in the Central Division was 1,336,366 cubic yards, of which 259,147 cubic yards were classified as earth, and 1,077,219 cubic yards as rock. Of the total, 1,335,590 cubic yards were removed by steamshovels, and 776 cubic yards by hand.

The high record for the month was made by shovel No. 207, working 26 days in the Culebra district, which excavated 58,412 cubic yards of earth.

The second best record for the month was made by shovel No. 208, working 24 days in the Culebra district, which excavated 53,822 cubic yards of rock.

The best record for a shovel of the 70-ton class was made by shovel No. 109, working 26 days in the Culebra district, which excavated 50,561 cubic yards of earth.

Shovel No. 207, working in the Culebra district, made a high record for one day by excavating 3,211 cubic yards of earth on July 18.

Except where noted, monthly reports are computed by place measurement, while the daily reports are based on car measurement. The best record for the month and for one day are shown in the following table:

BEST RECORDS FOR THE MONTH.

CULEBRA DISTRICT.

SHOVEL No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
207	58,412		58,412	26
208		53,822	53,822	24
212		52,716	52,716	26

EMPIRE DISTRICT.

SHOVEL No.	Earth.	Rock.	Total.	No. of days at work.
258		32,108	32,108	26
211		30,576	30,576	26
210		30,216	30,216	26

PEDRO MIGUEL.

SHOVEL No.	Earth.	Rock.	Total.	No. of days at work.
231		50,653	50,653	24½

BEST RECORD FOR ONE DAY.

Shovel.	LOCATION.	Date.	Character of material excavated.	Cubic yards.
229	Empire	July 9	Rock	2,224
229	Empire	July 11	Rock	2,128
209	Empire	July 15	Rock	2,090
207	Culebra	July 18	Earth	3,211
207	Culebra	July 27	Earth	3,117
207	Culebra	July 1	Earth	2,907
212	Culebra	July 10	Rock	2,694
231	Pedro Miguel	July 1	Rock	3,059

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 90 per cent completed, 203,895 cubic yards, out of a total of 225,000, having been placed at the close of work on August 3. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
July 29	60	4.30	1
July 30	68	6.00	1
July 31	36	3.00	1
August 1	66	5.30	1
August 2			
August 3	72	5.00	2
Total	302	24.00	1.20
Previously reported	203,593		
Grand total	203,895		

SOCIAL LIFE OF THE ZONE.

Woman's Clubs, Fraternal Orders, Etc.

The Empire Woman's Club will hold an exhibit of the art collection of the Canal Zone Federation of Woman's Clubs at the Commission clubhouse on Thursday afternoon, August 29. The members of the Ancon Study Club will be its guests on that date.

A girls' sunshine society has been organized at Empire, with 22 members between the ages of 12 and 16. The society has four officers and a director. The meetings are held in the Commission chapel every Monday evening. They consist of a short prayer meeting, followed by a business meeting. Once a month a "sociable" is held, when the girls entertain their friends. The money of the society is forwarded to the national headquarters in New York to be used for the work among the blind babies.

There was an unusually large attendance at the meeting of the Grand International Auxiliary, the women's branch of the order of the Brotherhood of Locomotive Engineers, on Friday afternoon, July 26. Following the business meeting, which was held in the lodge hall at Las Cascadas, the members adjourned to the home of Mrs. Hutton, who entertained with cards. Refreshments were served.

The masonic order of the Knights Templar, Canal Zone Commandery, N. D., was organized at Las Cascadas in July, with 60 members. F. W. Walraven is the eminent commander.

The order of Pythian Sisters holds its meetings at Las Cascadas on the first and third Thursday afternoons in each month. The order is growing steadily, new members being added at each meeting.

The members of the ladies' auxiliary, Panama Lodge, No. 1, United Spanish War Veterans, are invited to attend the meeting to be held in the Empire lodge hall on Sunday, August 11, at 3 p. m. At this meeting, members badges will be distributed, and printed copies of the rules and regulations of the order will be given out.

Church Notes.

The Rev. William H. Decker of Empire will sail for New York on the *Advance*, on August 27, for two months' leave of absence. At the expiration of this period he will resign from the work on the Isthmus and enter upon his duties as priest in charge of the Episcopal church at the Isle of Pines, under the Bishop of Cuba. This post was made vacant by the recent death of the Rev. Thomas Bury. The mission consists of the church at Santa Fé, with several smaller missions in the outlying districts. Its members are American families who are engaged in fruit growing on the island. Mr. Decker has been in charge of the Episcopal work at Empire, together with the missions at Las Cascadas, Bas Obispo, and Gorgona, for the past three and one-half years. During his pastorate, he has baptized 800 children, and presented 250 candidates for confirmation.

The Ladies' Aid Society, in connection with the Empire Christian League, is arranging to hold a missionary convention at Empire on Friday, October 25. This will be the first convention of women engaged in Christian work to be held in the Canal Zone, and it is planned for the purpose of promoting a missionary spirit among the women, and of broadening the knowledge of the work that is being carried on by Christian churches in all lands. Especial emphasis will be laid on the method and need of teaching missionary work in the Sunday schools. The organizations that will be asked to participate in this congress are: The Ladies' Aid Society of the Cristobal Union Church, the Woman's Altar Guild of Christ Church, Colon, the Ladies' Aid of the Union church and the Woman's Altar Guild of Gatun, the Woman's Altar Guild of St. Mary's Church, Empire, the Woman's Foreign Missionary Society of the Methodist Episcopal Church, Panama, and the Woman's Altar Guild of St. Luke's Hospital chapel, Ancon. These societies have among their members women residing in Culebra, Gorgona, Paraiso, Pedro Miguel, Las Cascadas, and Corozal, with a total membership of approximately 150.

The Woman's Altar Society of St. Ferdinand's Church, Empire, held a card party and entertainment at the parish house on Saturday evening, July 20. The rooms were decorated with palms and potted plants, and hung with flags and bunting. In the social hall, on the ground floor there were five card tables. The prizes given were two silk umbrellas, a Wedgwood candlestick, gold cuff links, a piece of embroidered linen, and a Chinese ash tray. Refreshments were served in the large hall in the basement of the building. During the intermission, a musical program was carried out by Mrs. Lewis, Miss Smith, and Mr. Dohrmann. The entertainment netted over $75. The altar society is making arrangements to hold a bazaar for the sale of fancy work in December.

Preaching services are held in the recreation hall at Camp Otis every Tuesday evening, the usual attendance ranging from 250 to 300. The Commission chaplains, Rev. Carl H. Elliott of Cristobal, the Rev. A. A. Nellis of Empire and Culebra, and the Rev. H. O. Purdy of Gatun alternate in presiding at the services.

Bishop Homer C. Stuntz of the Methodist Episcopal Church, has been elected to the charge of the work of the church in South America, which includes the district of Panama. It is expected that the bishop will pay his first visit to the church here in December of this year.

The semiannual meeting of the officers of the Cristobal Union Church was held in the chapel at the close of the evening service on Sunday evening, July 21. Dr. Claude C. Pierce, the president of the executive council, presided. The reports showed that the church services have been well attended, and that interest in the Sunday school has been maintained. Under the jurisdiction of the executive council, social service extension has been a feature of the church work. This includes a class in English for Chinamen, which has an enrollment of 20, a handicraft club for boys, which meets two evenings in each week for elementary instruction in woodwork, having 15 members, while a third activity is a club of 10 girls for outdoor and indoor sports and exercises, modeled after the camp fire girls in the United States.

Fatal Accident in Culebra Cut.

James Hunt, check No. 137600, and Cecil Goring, check No. 136316, Barbadian laborers, working in Culebra Cut, were killed on July 30 by a falling rock. In the same accident, Edwin E. Burke, a Jamaican laborer, received a fractured skull and was sent to Ancon Hospital. The men were working on a berm of the Canal about 40 feet from the bottom of Gold Hill, and the rock, evidently loosened by a heavy rain previous to the accident, fell in the midst of the men.

Alterations to Hotel Tivoli.

Extensive alterations will be made to the lower front veranda of the Hotel Tivoli. The wall of the building on the dining room side will be removed, and pillars substituted. The veranda will be widened 13 feet, making its total width after enlargement 23 feet. The pillars will give it the effect of being a part of the dining room, and it will be so used when found convenient. The veranda on the right side of the porte cochére will likewise be widened to 23 feet, in order to give the entire lower front a symmetrical appearance, but the wall between it and the ballroom will probably be allowed to remain as it is. The added space, however, will provide greater comfort for the hotel guests. A rearrangement will be made also in the office. The manager's private office will be enlarged, taking up some of the space now used for general purposes; additional counter space will be provided, although within the same limits as at present, and it will be so arranged that not only can the clerks work to better advantage, but they will be able to obtain an improved view of the lobby.

PERSONAL.

Maj. Chester Harding sailed for the United States on the steamer *Ancon* on Tuesday, August 6, on his annual leave of absence.

Mr. J. W. Sneed, superintendent of construction in the Chagres district has resigned, effective August 19. He will engage in the promotion of an engineering and construction company, with headquarters on the Isthmus.

Dismantling Mixer Plant.

The auxiliary mixing plant in the east side wall of the upper level of Miraflores Locks, using two 2-cubic yard mixers, electrically driven, is being dismantled. One of the mixers had previously been transferred to a similar plant set in the east wall of the lower level; the other will be retained. The heavy masonry work for the walls of the upper lock is practically completed, with the exception of the gap in the east side wall, occupied by the auxiliary mixing plant. Filling this will require about a thousand yards of concrete, which will be furnished by narrow-gage trains from the plant in the lower lock, and placed by the one chamber crane which remains on the upper level. The crane will also be used for handling the filling of earth and screenings to be placed in part of the center wall.

Pacific Division Sand Service.

A report of sand cars loaded and shipped from Balboa during the month of July, follows:

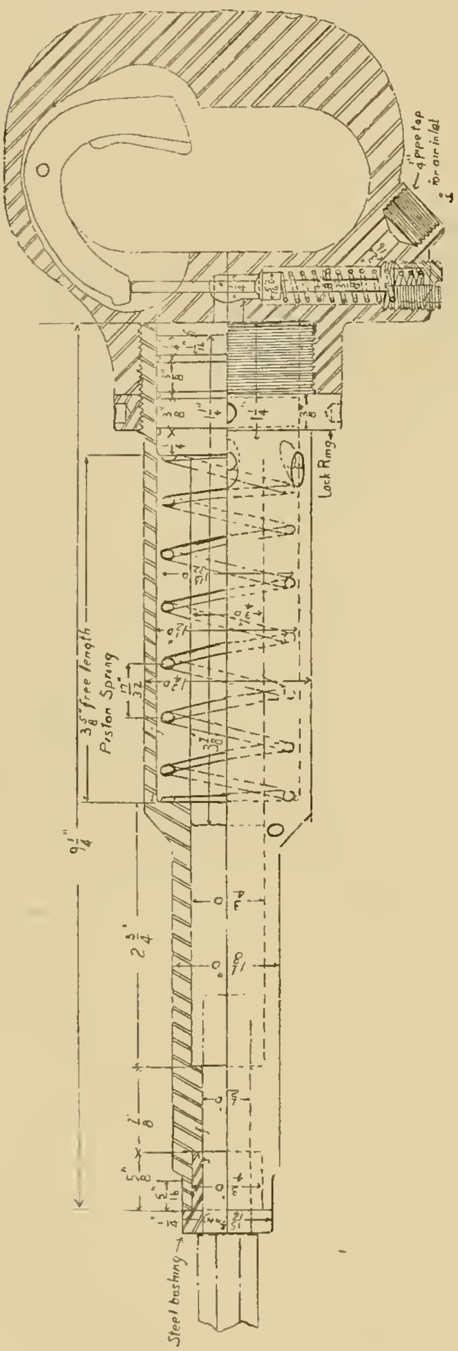
DESTINATION.	Number Cars.	Cubic Yards.
Pacific Division	2,707	47,213
Atlantic Division	26	522
Central Division	31	465
Fortifications	*87	2,931
Quartermaster's Department	3	75
Civil Administration	1	25
Lighthouse division	3	61
Balboa terminal	3	53
Miscellaneous	5	125
Total	*2.866	51,470

*Including two barge loads.

PNEUMATIC HAMMER.

Description of Practical Invention of Canal Commission Employe.

The "Panama" pneumatic hammer, designed and manufactured at the Empire shops, has given uniform satisfaction in use on various parts of the Canal work and is believed to be superior in several respects to the hammers heretofore supplied. It excels in speed and simplicity. Under the standardized air pressure of from 80 to 100 pounds to the square inch it delivers 3,500 blows per minute, while the other hammers tested under similar conditions delivered a maximum of 2,200 blows per minute. The "Panama" hammer is made up of 11 parts, exclusive of the tool. Other hammers average about 23 parts.



"PANAMA" PNEUMATIC HAMMER.

A longitudinal section of the hammer, or "gun," is shown in the accompanying diagram. Connection with the air hose is made on the under side of the handle, through a ¼-inch pipe thread. Passing from the connection through a hole 3-16-inch in diameter, the air is regulated by a form of bevel seated valve. This valve is kept closed when the hammer is not in use by a spring pressing up against its base. The operation of the valve is controlled by the trigger in the upper part of the handle. When the hammer is gripped for use, the pressure of the fingers draws one end of the pivoted trigger back into a recess in the handle, and the other end of the trigger is forced down upon the upper end of the valve stem, opening the valve. The air enters a chamber behind the piston by which the tool is actuated. The piston is forced forward against the resistance of the piston spring, striking the tool, and causing it to move forward and do its work. As the piston nears the end of its stroke, its head passes the exhaust holes. Instantly the pressure in the piston chamber is reduced to that of the atmosphere, and the compressed piston spring causes the piston to fly back to original position, closing the exhaust. The air pressure immediately forces the piston forward again and the strokes are thus repeated in rapid succession.

The parts of the hammer, named in order from the tool end, are the bushing, the barrel, piston spring, piston, lock ring, valve, valve spring, screw plug, handle, trigger, and trigger fulcrum pin. The free length of the piston spring is 3⅝ inches, and the length of the piston travel is about 2 inches. The length of the hammer, exclusive of the tool, is 12¾ inches, and its weight is 5½ pounds. It is made entirely of steel and finished all over. It is the invention of Mr. Fitz James Lewis of Empire, who has applied for a patent on it.

Canal Zone School Year.

A summary of the work of the public schools of the Canal Zone during the seventh year of their existence, which closed on June 28, and of the Canal Zone High school is, as follows:

Twenty-four schools were opened at the beginning of the school term on October 1, 1911, with an enrollment of 2,105 children, 1,174 in the 10 white, and 931 in the 14 colored schools. The highest enrollment during any one month was in June, 1912, when 1,556 pupils were enrolled in the white schools, and 1,765 in the colored schools. The total enrollment for the school year was 3,321 pupils, of which number 1,556 attended the white schools, and 1,765 the colored schools. New buildings were erected, or old buildings converted for school purposes, as follows: Mandinga, one room, Ancon, four rooms; Miraflores, one room; and Cucaracha, one room, all for colored children, while the schoolbuilding at Tabernilla for white children was reerected at Mount Hope for colored children. An addition of one room was made to the schoolbuilding at Pedro Miguel for white children. The attendance for the year was the highest in the history of the Canal Zone schools.

The number of buildings used by the Division of Schools for school purposes on June 30, 1912, was 26, eleven schools for white children and 15 for colored children. Twenty-three of these are buildings especially constructed or converted for school purposes, while of the three remaining schools, one for white children was conducted in a room of the Las Cascadas hotel building, and another in a room in building No. 52 at Porto Bello, while the school at Majagual was maintained in the native church building.

The system of medical inspection of children in the schools, begun in 1911, was continued during the year, and the result of this service is set forth in THE CANAL RECORD of July 10, 1912.

A school garden was maintained in connection with the colored school at Empire, and the value of the products grown, which were given to the pupils, is estimated at $218.64.

A tuition fee of $4, United States currency, per month in the graded schools, and $8, United States currency, per month in high schools, is charged for all pupils attending the Canal Zone schools whose parents are nonresidents of the Zone, and are not employed by the Isthmian Canal Commission or the Panama Railroad Company. During the year, the sum of $694 was collected in tuition fees, as compared with $576 derived from the same source during the preceding fiscal year.

In addition to the graded schools, a fully equipped high school was maintained at Gatun, with a total enrollment during the year of 38 pupils, while at Ancon a branch high school, embracing the two lower grades was conducted with an enrollment of 18 pupils.

The following five pupils were graduated from the High school on June 30: Miss Ruth Hackenberg of Gorgona, Miss Edith Stevens of Gorgona, Miss Myrtle Lindersmith of Cristobal, Miss Catherine C. Francis of Empire, and Miss Helen Michaels of Empire.

As an incentive for the attainment of high scholastics, prizes were offered by individuals interested in the schools, and awarded, as follows:

1. To the High school pupil submitting for publication in *The Zonian*, the High school paper, the best contribution, $5. Won by John C. Loulan of Gatun.
2. To the High school pupil procuring the best general average during the school year, $5 gold. Won by Miss Catherine C. Francis of Empire.
3. To the pupil in the grammar school grades (white) procuring the best general average for the school year, $5 gold. Won by Myron Weaver of Cristobal.
4. To the pupil in the colored, or native schools, procuring the best general average during the school year, $5 gold. Won by Pancho Betancu of Empire.

Prizes of $2.50 gold each for the next best contributions to the June issue of *The Zonian*, were won by Miss Ruth Hanna of Gatun, with a poem, and Miss Helen Michaels, of Empire, with a child story.

Obituary.

Charles F. Locks, an employe of the Mechanical Division at Gorgona, dropped dead from heart failure while at his work in the Gorgona machine shop on August 2. He was 36 years of age, married, and had been on the Isthmus nearly three years, coming here from Vilas, Pa. He is survived by his wife, who lives at Gorgona.

Local No. 677, I. B. E. W.

On August 11, at 2.30 p. m., there will be a business meeting of Local No. 677, I. B. E. W., at Gatun, following which there will be a "smoker." All members are requested to be present, and all electrical workers in the Zone are invited to attend.

H. V. HOWARD, *Acting Secretary.*
Gatun, C. Z., August 2, 1912.

CRISTOBAL DOCKS.

Extension of Breakwater Authorized—Progress on Foundations.

In the plans for the permanent terminal docks at Cristobal, provision was made for two docks and five piers in connection with a breakwater. It was contemplated that present requirements only called for the construction of two docks and one pier, or about 3,500 lineal feet of dock front, and work on this part of the project has been in progress since July, 1911. The plans called for the construction of a breakwater 2,000 feet long, and authority has recently been granted by the Chairman and Chief Engineer for the extention of this breakwater 1,200 feet, which will bring its total length to 3,200 feet. The extension is made primarily for the purpose of affording additional protection to the end of Pier 17 in periods of rough weather, and it will also serve as a means of connection with the other piers when it becomes necessary to build them at some future time. The extension of the breakwater can be accomplished more economically now than when the present work is completed and the organization disbanded. There is plenty of suitable material still available in the borrow pits which have been opened up east of the Cristobal railroad yard.

The sinking of the 4-foot steel caissons on Dock 16, and the filling of these cylinders with concrete, is approximately complete, and the two back walls along the face of this dock are also practically finished. The inner wall is three feet wide, rests on a solid concrete base five feet wide, and is surmounted by a parapet 1½ feet wide. Supports, or haunches, of reinforced concrete stand out from this wall at regular intervals to aid in the support of the heavy iron floor beams, which rest on the wall. Here, as well as in other parts of the docks, Chagres River gravel has been substituted for crushed rock in the making of concrete. The outer wall, which is separated from the inner wall by a distance of 12 feet, differs somewhat in construction. A concrete base was made and upon this, spaced at set intervals, have been placed large concrete blocks, formerly used in the protection of the Cristobal sea front. All of these blocks have now been put to use. Many of them, including a number of those made during the French times, were dumped on the outside of the sea wall in front of the new Hotel Washington, and others have been used along the sea front of the mole at the terminal docks.

Over 400 steel cylinders have been sunk on the site of the docks to date. They are all in place on Dock 16, practically all on the mole, and about 50 per cent of them on Dock 17. The depth which it has been found necessary to sink them to reach bed rock varies from 60 to 80 feet, and the length of the cylinders, when bolted together, ranges from 70 to 90 feet. The floor of the rock lies at different angles, hence, it occasionally happens that in sinking the caisson, one part of the edge will reach rock, and the remainder will still be in soft material. This is remedied by sinking the cylinder until it rests on solid rock all around. The cylinders are placed in position by locomotive cranes, and driven by steam hammers, of which there are two used on the work. These machines are operated by steam supplied from the boiler of locomotive cranes, and have been modified to meet the special requirements of this work. The buffer, or cap, which sets on the top of the cylinder while the hammer is working, has been made an integral part of the equipment, and the whole is handled as one piece. As soon as the complete cylinder is in position, the water is pumped out with Nye pumps, having a capacity of about 250 gallons per minute, five of which, in two sizes, are in use on the work. This operation usually takes about 15 minutes. The next step is to remove the material from the inside of the cylinder, and this is done by the bucket method, one man at a time working inside of the caisson. In some places over the area covered by the docks considerable coral rock was encountered; in others, the material consisted mostly of mud. As the caisson is practically watertight, the mud is hard and compact and easy to excavate by hand digging, compared with the excavation for the piers of the Panama railroad lumber dock at Balboa, where the material was excessively soft and hard to handle. The first step in concreting is to seal the lower section of the cylinder to the rock. This is accomplished by lowering concrete in a bucket, containing perhaps one-eighth of a cubic yard. The bucket is fitted with a valve in the bottom, which is operated by a cord from above. This allows the concrete to flow out and settle uniformly around the rim of the cylinder. After this sets, concrete is poured in until the top is reached. At the present time, the method is employed of constructing a small, square concrete column, built up in the center of the cylinder upon which to carry temporarily the steel I-beams, or floor girders. Later, the tops of the caissons will be filled up by means of steel forms, so that the concrete can all be bonded together, including the I-beams, the haunches, and the reinforcing rods. These forms, 12 in number, were built at the Gorgona shops. The reinforcement of the concrete in the cylinders consists of 70-pound rail, four in each.

About 30 per cent of the steel floor system was in place on Dock 16 on August 2, and the work will be continued steadily from now on. No concrete has been placed in the cylinders on the mole to date. The 3-foot cylinders, which will form the foundation for the small boat landing, are ready for driving, and this work will be started shortly. The last trestle forming the false work on the west side of Pier 17 has been begun. No concrete has been placed in the cylinders on this pier.

The estimate for dredging the slip between Dock 16 and Dock 17 amounts to 310,000 cubic yards. The dipper dredge *Mindi* had taken out to the first of the month about 72,000 cubic yards, or 23 per cent.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending August 3:

DATE.	Hours worked.	Cubic Yards.
July 29	8.10	3,067
July 30	8.05	2,719
July 31	7.40	2,861
August 1	7.30	2,430
August 2	8.20	3,129
August 3	8.20	2,854
Total	48.05	17,060

Missing Man.

Any one having information regarding the present address of Mr. Harvey Dodd, American, formerly with the Subsistence Department, later with an attorney in Colon, is requested to communicate with the superintendent of construction, Chagres district, Bas Obispo, C. Z.

Bachelor Accommodations at Corozal.

On account of the larger number of men working in the Pacific Division for the Isthmian Canal Commission and the McClintic-Marshall Company, bachelor quarters at Corozal have recently been increased by accommodations for 112 men in the building formerly used as the lodge hall at Culebra, a remodeled French house, and one type-18 house. The capacity of the Commission hotel is being enlarged by the removal of a partition at the north end of the dining hall. This will increase the length of the hall by 40 feet, adding about a thousand square feet of floor space, in which ten tables, seating six each, will be placed. Twenty-six tables are now used in the hotel, and about 750 meals are served daily.

Fortune Island Laborers Returned.

The steamer *Advance*, which sailed from Cristobal on Saturday, August 3, will make a stop at Fortune Island on its way to New York, to land 25 Fortune Island laborers, the last from this locality in the employ of the Isthmian Canal Commission. The Fortune Islanders were among the first of the West Indian contract laborers to be recruited, and altogether 500 of them were brought to the Isthmus to work on the Canal and the Panama railroad. About 200 of this number left the service, or quit one job and took another under a different name, leaving about 300, all of whom have now been repatriated. Experience has shown that the negroes from Fortune Island are outranked by those from a number of other West Indian islands, so far as efficiency is concerned.

Colon Residence Erected by Commission Force.

A force of the Constructing Quartermaster is engaged in the erection of a residence for Mr. Porfirio Melendez, a former governor of the province of Colon, on lots 8 and 9, block 3, Third street, Colon. Mr. Melendez formerly resided at Bohio, and his house there, a two-story frame structure, was the largest in the settlement. With the filling of Gatun Lake, it became necessary to vacate the site, and an agreement was reached whereby the Canal Commission undertook to erect and furnish the material for a new house for him in the city of Colon. The house will be a two-story frame building, 35½ by 55 feet in size, and will contain 10 rooms, including office, kitchen, and servants' quarters.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examinations for pilots, mates, masters, and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on August 14. All applicants for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms of application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8 a. m., on August 14, with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their ability properly to operate an automobile, and must have the automobile with them.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

GENERAL.

Mr. H. N. Sollenberger, who has been secretary at Porto Bello, has accepted a position as physical director of the Y. M. C. A. at Bogalusa, Louisiana. He left for his new field on Thursday, August 1. Mr. C. B. Russell has been appointed acting secretary of the Porto Bello clubhouse.

Mr. W. T. Compton, a graduate of Ohio Wesleyan University, has been engaged as special secretary for a few months during vacation season.

A moving picture film showing views of the steamship *Titanic* as the vessel left the dock on its initial trip was shown at the clubhouses during the week.

CULEBRA.

A six-team bowling tournament has been organized, and will open on Monday evening, August 5. It will continue for five weeks. Games are scheduled to be played on Mondays, Wednesdays, and Fridays.

The volleyball tournament will close on Tuesday night, when the "Blues" will play the "Reds" On Tuesday, July 30, the "Whites" played the "Reds," resulting in a score of 5 to 0 in favor of the "Reds." On Friday evening, the "Whites" played the "Blues," resulting in a score of 3 to 2 in favor of the "Whites." The closing games will decide the championship of the league. Each man on the winning team will receive a sweater as a prize.

The standing of the teams on Monday, August 5, is, as follows:

	Won.	*Lost.*	*P. C.*
Reds	16	9	.640
Blues	14	11	.560
Whites	10	20	.333

A basketball tournament is being organized.

John Leonard of the boys' department made a high score of 107 in duckpins last week.

EMPIRE.

The local tenpin bowling league tournament ended in favor of the Independent team, which won 16 out of 24 games. The other teams have three games to bowl before the final results are known.

There will be no bowling for about two weeks as the alleys are closed for repairs. New tenpin balls have been ordered from the United States.

The August pool tournament will start on Monday, August 12. All wishing to enter are requested to register before that time.

The standing of the local basketball league is as follows:

	Won.	*Lost.*	*P. C.*
English	2	1	.750
Americans	1	1	.500
Germans	1	2	.250

Games will be played Monday, August 5, and Thursday, August 8.

GORGONA.

Gorgona won two out of three games from the Cristobal bowling team on Saturday, August 3. The scores follow:

Cristobal				Gorgona.			
Gibson	118	163	167	Sims	194	141	170
Wurdeman	149	146	121	Bentley	136	116	156
Humphrey	142	146	133	King	204	178	161
Rosteck	177	116	127	Haldeman	156	125	138
Barrett	160	198	137	Davis	154	186	176
Total	746	769	685		844	746	801

The following high scores were rolled on the local alleys during the week: Bigpins—Gebherd, 224, Davis, 200, 204, 200, 224, 210; Lowe, 200; Roper, 202, 200; Sims, 206, 200; King, 214.

Duckpins—Arnold, 111; Sims, 109, 102, 115; Ruchte, 104; Davis, 100; Simka, 100; Burmeister, 107; Seeht, 104, 103, 100; King, 102.

A local bigpin tournament will start on Monday, August 5, with five 4-men teams.

The Culebra chess club defeated the local players on August 3, by the score of 10 to 2. The individual records were:

Gorgona.	Won.	Lost.	Culebra.	Won.	Lost.
Strong	1	1	Dubois	1	1
Morehead	1	1	Bartlett	2	0
Flam		2	Brown	2	
Byrne		2	Connor	1	1
Nagel		2	Minner	2	
Taylor		2	Warner	2	

GATUN.

At the one-night checker tournament held on Saturday evening, August 3, F. L. Bernsee of Cristobal, the champion checker player of the Isthmus played nineteen local men simultaneously. Seventy-two games were played. F. D. Gartrell, president of the local club, won three games out of the five he played with Mr. Bernsee; R. E. Chatfield is credited with two draws; J. Scott, one draw, and B. Clearwater one draw. Mr. Bernsee's record, therefore, for the evening was: Won 65 games; drew 4, and lost three. The men who played Mr. Bernsee were Dr. Kalloch, R. Robertson, Dr. Dunn, F. D. Gartrell, J. Scott, R. E. Chatfield, G. J. McFarland, W. J. West, T. Smith, G. N. Kane, . O'Neil, B. Clearwater, F. G. Smith J. A. Vance, H. Stall, C. Ourand, F. M. Noble, P. J. Claherty, T. H. Dickson.

Mr. P. Brunner will continue to take charge of the gymnasium classes until the new physical director arrives.

Two nights each week will be devoted to basketball practice. From the present outlook Gatun will have an unusually strong team for the Isthmian tournament.

The local tenpin tournament is now under way with ten teams entered, each of which is named after a state

G. A. Barte won first prize for three high games in tenpins for the month of July. P. J. Claherty won the prize for three high games in duckpins.

CRISTOBAL.

The next moving picture show will be held on Saturday night, August 10.

During the past week a schedule was made for the tri-team basketball league beginning Tuesday night, August 6. Messrs Schlager, Howe, and Johnson were chosen captains by the players, the teams being named the "Schlagerites," "Howeites," and "Johnsonites," respectively. The league will consist of a series of six games played by each team. The schedule follows:

Tuesday, Aug. 6, Howeites vs. Johnsonites.
Thursday, Aug. 8, Schlagerites vs. Johnsonites.
Tuesday, Aug. 13, Howeites vs. Schlagerites.
Thursday, Aug. 15, Johnsonites vs. Howeites.
Tuesday, Aug. 20, Schlagerites vs. Johnsonites.
Thursday, Aug. 22, Howeites vs. Schlagerites.
Tuesday, Aug. 27, Johnsonites vs. Howeites.
Thursday, Aug. 29, Schlagerites vs. Johnsonites.
Tuesday, Sept. 3, Howeites vs. Schlagerites.

Gatun defeated the Cristobal bowlers at Cristobal on Saturday evening, August 3, by the following scores:

Cristobal	776	757	787	Gatun	881	809	919

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 14, 1912, (75th meridian time):

DATE.	High	Low	High	Low	High
	A.M.	A.M.	A.M.	P.M.	P.M.
August 8	......	4.34	10.42	5.22	11.25
August 9	......	5.47	11.53	6.28	......
August 10	12.38	6.57	1.04	7.33	......
August 11	1.46	8.01	2.07	8.31	......
August 12	2.45	8.57	3.05	9.25	......
August 13	3.37	9.50	3.56	10.14	......
August 14	4.25	10.40	4.45	11.02	......

Supplies for Canal Work.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Balboa, Cristobal, and Colon, during the week ending August 3:

Tivives, July 28, from New York, with 762 pieces steel rail, 83 bundles scoops, seven cases paint, 15 cases zinc, 30 barrels rosin, 12 cases wire, 930 bundles iron pipe, 1,095 pieces iron pipe, 800 kegs bolts, for stock; nine cases electrical material, for Atlantic Division; 28 reels cable, 21 cases machinery, for superintendent of erection; 163 pieces car couplers, four cases electrical material, for Mechanical Division.

Clyde, July 28, from New York, with 98 pieces steel angles, for Panama Railroad Company.

Pennsylvania, July 29, from San Francisco, with 143 pieces pine lumber, for stock.

Advance, July 30, from New York, with 10 kegs nails, 205 kegs bolts, 36 reels wire rope, 68 cases caustic soda, 20 cases brushes, 10 cases files, for stock; 24 barrels insulators, for superintendent of erection; and a miscellaneous cargo, the whole consisting of 480 packages, weighing 115 tons.

Prinz Sigismund, July 30, from New York, with 220 pieces steel bolts, for Atlantic Division; 16 cases fuse, for stock.

Zocapa, July 31, from New York, with 25 bales rubber hose, 380 pieces steel rail, for stock; 165 reels steel rope, for superintendent of erection.

Abangarez, August 1, from New Orleans, with 39 pieces white oak lumber, for Pacific Division; 2,282 pieces white oak lumber, 3,651 pieces yellow pine lumber, for Mechanical Divison; 136 pieces piling, 511 bags feed, 3,201 pieces sewer pipe, 300 barrels fire brick, 24 pieces dipper teeth, 3,278 pieces lumber, for stock; 183 cases limit switches, 395 bundles castings, for superintendent of erection.

Rainfall from July 1 to 31, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	3.00	16	10.25
Balboa	3.31	16	9.76
*Miraflores	1.87	17	8.37
Pedro Miguel	2.15	24	11.54
Rio Grande	2.17	30	9.11
Central Section—			
Culebra	2.34	30	10.12
*Camacho	2.47	30	10.87
Empire	2.19	30	9.15
Gamboa	3.45	16	14.27
*Juan Mina	2.22	17	9.96
Alhajuela	2.34	1	10.17
*El Vigia	2.78	2	13.95
*Gorgona	3.65	17	10.46
*Frijoles	1.98	17	9.87
*Trinidad	3.44	29	11.80
*Monte Lirio	2.50	17	11 60
Atlantic Section—			
Gatun	2.31	16	11.84
*Brazos Brook	6.15	17	16.85
Colon	2.99	17	13.13
Porto Bello	3.49	16	24.21
*Bocas del Toro	1.57	4	11.63

*Standard rain gage—readings at 5 p. m., daily. Automatic rain gage at unstarred stations—values midnight to midnight.

July Rainfall for Three Years.

STATIONS.	1910	1911	1912	Station Aver.	Years of Record	Rai'y days 1912
Pacific Section-						
Ancon	9.26	5.78	10.25	8.16	16	20
Balboa	8.99	7.12	9.76	9.88	14	19
Miraflores	11.31	6.83	8.37	9.20	4	20
Pedro Miguel	8.95	6.36	11.54	9.11	5	22
Rio Grande	15.78	7.00	9.11	11.04	8	20
Central Section-						
Culebra	16.38	5.95	10.12	9.52	21	22
Camacho	16.17	6.62	10.87	10.87	6	22
Empire	12.60	4.00	9.15	9.32	8	22
Gamboa	17.00	7.26	14.27	10.44	32	25
Juan Mina	.....	8.47	9.96	9.22	2	20
Alhajuela	16.99	8.84	10.17	13.23	14	22
El Vigia	15.17	8.76	13.95	12.99	4	20
Gorgona	13.48	6.45	10.46	11.21	9	20
Frijoles	......	......	9.87	......	1	21
Trinidad	14.91	3.63	11.80	9.52	5	25
Monte Lirio	19.87	10.58	11.60	14.13	5	27
Atlantic Section-						
Gatun	19 04	6.66	11.84	12.41	7	26
Brazos Brook	22.01	14.04	16.85	16.88	7	28
Colon	21.07	14.58	13.13	16.38	42	26
Porto Bello	22.80	14.48	24.21	19.56	5	28

WEATHER CONDITIONS, CANAL ZONE, JULY, 1912.

Normal conditions of rainfall, cloudiness, and relative humidity prevailed during the month of July.

The rainfall was well distributed over the Isthmus, but heaviest on the Atlantic Coast. Heavy general rains occurred around the 16th, 17th, and 30th of the month. The maximum precipitation recorded during 24 consecutive hours was 6.15 inches at Brazos Brook on the 16th and 17th. Monthly totals ranged from 8.37 inches at Miraflores to 24.21 inches at Porto Bello.

Monthly mean temperatures were nearly one degree above the July averages for past years, while the average hourly wind movement was slightly above normal at each station. During a wind squall at Culebra, on the 30th the wind attained a maximum velocity of 36 miles an hour from the northeast.

There was a notable decrease in night fogginess compared with June conditions. Of the fogs observed, 54 per cent were dissipated by 6.30 a. m., 84 per cent by 7.30 a. m., and 98 per cent by 8.30 a. m.

The following table summarizes the weather conditions for the month.

STATIONS.	Press're (reduc'd to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date	Minimum.	Date.		Total inches.	Station average	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date
Colon	29.852	80 6	89	July 27	71	July 1	88	13.13	16.38	26	7,574	N.	25	N. E.	July 28
Culebra	29.832	79.8	91	July 12	70	July 17	92	10.12	9.52	22	4,962	N.W.	35	N. E.	July 30
Ancon	29.823	80.6	94	July 27	70	July 14	91	10.25	8.16	20	5,176	N.W.	24	S. E.	July 14

OFFICIAL CIRCULARS.

Shop Expense Percentage.

CULEBRA, C. Z., August 5, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

In accordance with the provisions of Circular No. 169-E the following shop expense percentage for each shop is hereby fixed, effective August 1, 1912, and will be applied until further orders, to the distributed labor used in all shop work, in accordance with the provisions of Circular No. 264-A, viz.;

DIVISION OR SHOP.	Shop expense percentum.
Mechanical Division	40
Drydock shop	40
Balboa shop	50
Porto Bello	50
Toro Point shop	45
Panama railroad shop	30

Circular letter from this office dated May 3, 1912, is revoked.

GEO. W. GOETHALS,
Chairman, Isthmian Canal Commission.
President, Panama Railroad Company.

Estimates for Fiscal Year Ending June 30, 1914.

CULEBRA, C. Z., August 1, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

1. The detailed estimates of all departments and divisions for the fiscal year ending June 30, 1914, for submission to Congress, will be forwarded to me not later than August 27, 1912, in sextuplicate, except that the divisions of the Department of Construction and Engineering may submit their estimates in quadruplicate. They must be prepared and submitted in accordance with section 5 of the Act of Congress approved June 25, 1910, reading, as follows:

> "Section 5. Hereafter there shall be submitted under each item of appropriation, proposed in the annual estimates for construction of the Isthmian Canal, notes giving in parallel columns information which will show the number, by grade or classes, officers, employes, and skilled and unskilled laborers proposed to be paid under each of said appropriations for the ensuing fiscal year and those being paid at the close of the fiscal year next preceding the period when said estimates are prepared and submitted; also, in connection with each item for material and miscellaneous purposes, other than salaries or pay for personal services, the amounts actually expended or obligated for like purposes during the entire fiscal year next preceding the preparation and submission of said estimates."

2. The estimates for salaries and wages of officers and employes and skilled and unskilled labor will be prepared on form C. E. 279-2.

The estimates for material, supplies, plant and equipment to be purchased under item 5 will be prepared on form C. E. 280-2.

The estimates for item 2 "Incidental expenses in the United States," item 9, miscellaneous material for the Department of Civil Administration and Law, and item 12, miscellaneous material for the Department of Sanitation, will be typewritten on blank paper the same size as forms mentioned above, in the same manner in which the details are printed on pages 4, 49, and 59 of the book of estimates for the Isthmian Canal for 1913.

3. Estimates for officers and employes, items 1, 3, 7, and 10:

The estimates for salaries of officers and employes in the United States (covered by item 1,) of the departments of Quartermaster's, Subsistence, Disbursements, and Examination of Accounts (all covered by item 3,) Civil Administration and Law (covered by item 7,) and Sanitation(covered by item 10,) shall be prepared in accordance with the form as printed in the book of estimates of the Isthmian Canal for 1913.

The estimates for officers and employes for the several divisions of the Department of Construction and Engineering (covered by item 3,) shall be prepared along the lines and arranged in the order as printed on pages 7 to 12 of the estimates for 1913.

4. Estimates for skilled and unskilled labor, items 4, 8 and 11:

The estimates submitted by each department or division for skilled and unskilled labor should be arranged in one alphabetical list in conformity with the method adopted in the estimates for 1913. In fixing the annual rate for hourly men the table printed in Circular 451 must be followed. Where a designation carries more than one rate of pay, for example: Blacksmith at $1,872 each, will be followed by blacksmiths at $1,800, each, and so on to the lowest rate of pay.

5. Under "Approved organization as of June, 1912," you must set forth your approved organization of that date, and, in making your estimate for the fiscal year ending June 30, 1914, you should take as a basis your authorized organization for the present fiscal year, making such changes as you consider necessary on account of anticipated requirements of the work. Your estimate should include only designations and rates of pay authorized by Circulars 229 and 299 revised to date, unless a different class of work is to be undertaken. In such case you should give a concise statement of the reasons for the change on a separate paper attached to the estimate.

6. If an increase in any item is submitted, either in number of employes or rate of pay, concise reasons for the increase must immediately follow the item or group of items affected.

Under each appropriation item for salaries and wages, that is, under your estimate for officers and employes and for skilled and unskilled labor, a statement of increases and decreases must be submitted on separate sheets the same size as the form used under the following headings:

Designation and rate of pay.	Increase.		Decrease.		Amount.	
	Men No.	Salary Am't.	Men No.	Salary Am't.	Increase	Decrease

7. Each sheet must be totaled separately, both as to number of men and amount. Where more than one sheet is used for the estimate the totals of each sheet will be carried to a summary statement on a separate sheet.

8. Overtime and longevity will be estimated ior separately as lump sum items, and the comparison will be with the actual overtime and longevity for the fiscal year ending June 30, 1912. These items will be added after the totals on the summary statement.

9. There will be deducted from the total footings for each appropriation item the estimated charges against other departments and divisions and for work done for employes. This item will be compared with the actual similar charges for the fiscal year ending June 30, 1912.

10. Estimates for material, supplies, plant, and equipment, item No. 5:

(*a*) The comparison opposite each item of material, etc., estimated for 1914, will be made with the amounts actually expended or obligated for like purposes during the fiscal year ending June 30, 1912. A statement of the reasons for any differences must be given. Any large items must be itemized and the necessity for the same must be explained on a separate statement. These estimates will be consolidated by the Chief Quartermaster, and you should consult him as to the exact form in whichth is estimate is to be submitted if it is not understood.

(*b*) *Cost of inspection of material and paying traveling expenses incident thereto:*

Each office in the United States will submit through the Washington office an estimate on form used for other items of salaries and wages to cover these items for the fiscal year 1914, in general accord with the instructions given under paragraph 3. These estimates will be revised, if necessary, by the Assistant Chief Engineer who will prepare an additional estimate on the same lines covering expenses on the Isthmus, except for such items as are under the Chief Quartermaster, who will submit an estimate for similar items under his jurisdiction.

11. The estimate submitted by each department or division will cover the total number of employes which such department or division will employ and the total amount of material and supplies to be used. In order that the estimates may be properly consolidated and deductions made for the value of work done by other departments estimated for under separate appropriations, and for work done for and material sold to employes, the Panama Railroad Company, Canal Zone Government, and outside parties, a separate statement in detail must be submitted showing for each department and division the amount of work it will bave done by other departments or divisions, the Panama Railroad Company, Canal Zone Government, employes, and outside parties.

12. Estimates relating to the funds of the Government of the Canal Zone:

In view of the provisions of section 6 of Bill H. R. 25069, as reported to the Senate, July 15, 1912, the Department of Civil Administration will submit an estimate as provided in that section which is substantially in accordance with section 5 quoted above.

13. All departments and divisions will, in addition to the consolidated estimate provided for above, submit, in quadruplicate, on form C. E. 279-2, an estimate by subdivisions of the work compared with the subdivisions in the approved organization of June 30, 1912. The total organization for each subdivision will be grouped together, headings only being used to show which are officers and employes under each subdivision, and which are skilled and unskilled labor. The subdivisions used will conform to the organization charts submitted for printing with annual report. The totals, both in designations of employes and amounts, must agree with the consolidated estimates for each department and division required above.

14. The consolidated regular estimates should be written in double space. The estimates under paragraph 13 should be single spaced, except that there should be a short space between each subdivision.

15. Except as specified under paragraph 9, the estimates will be consolidated in the office of the Examiner of Accounts who should be consulted if these instructions are not understood.

Any further information will be furnished upon request to this office.

Forms will be furnished as soon as received from the printer.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Member, Board of Local Inspectors.

CULEBRA, C. Z., August 1, 1912.

(Through Division Engineer, Atlantic Division.)

Mr. A. G. KITCHEN,
Drydock, Cristobal, C. Z.

Sir: Under authority conferred upon me by Executive Order of the President, No. 1131, dated October 2, 1909, you are hereby appointed a member of the Local Board of Inspectors to serve during the absence of Mr. C. J. Anderson on leave.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Monthly Schedule of I. C. C. Pay Car.

The following is the new monthly schedule of the I. C. C. pay car, effective August, 1912.

SCHEDULE FOR THE 12TH OF THE MONTH.

Leave Empire at 6 a. m.
Balboa dump, 7 a. m.
Balboa yard, 7.40 to 8.20 a. m.
Ancon crusher, 8.30 to 8.45 a. m.
Balboa terminal, 9 to 9.40 a. m.
Ancon dumps, 9.45 to 10 a. m.
Corozal, 10 to 10.20 a. m.
Miraflores dumps, 10.30 to 10.40 a. m.
Miraflores power house, 10.45 to 10.50 a. m.
Pedro Miguel, 10.55 a. m., to 12.50 p. m.
Miraflores, 12.55 to 1.10 p. m.
Miraflores Locks, east side, 1.15 to 2.20 p. m.
Miraflores Locks, west side, 2.25 to 3 p. m.

SCHEDULE FOR THE 13TH OF THE MONTH.

Leave Empire 6 a. m.
Culebra, 6.05 to 6.20 a. m.
Culebra to Rio Grande, 6.20 to 6.45 a. m.
Bridge 57½, 7 a. m.
Bridge 57½ through the "Cut" to Matachin, 10.30 a. m.
Bas Obispo, 10.40 a. m.
Las Cascadas, 10.50 to 11.50 a. m.
Gorgona, 12.05 to 12.55 p. m.
Gorgona shops, 1 to 2 p. m.
Empire, 2.30 p. m.

SCHEDULE FOR THE 14TH OF THE MONTH.

Leave Empire 5.30 a. m.
Gatun, 7.15 a. m., to 12.45 p. m.
Monte Lirio, 1.10 p. m.
New Frijoles, 1.25 p. m.
Caimito Junction to Gamboa, 1.40 to 2.40 p. m.

(Sgd.) EDWARD J. WILLIAMS,
Disbursing Officer.

Approved: GEO. W. GOETHALS.
Chairman and Chief Engineer.

Band Concert.

A band concert will be given by the Isthmian Canal Commission Band at Pedro Miguel, C. Z., Sunday, August 11, 1912, at 4.30 p. m. The program follows:

1. March—*Hero of the Isthmus*	Lampe
(Respectfully dedicated to Col. Geo. W. Goethals.)	
2. Selection—*Dr. De Luxe*	Hoschna
3. Waltz—*Wedding of the Winds*	Hall
4. Overture—*Poet and Peasant* (By request)	Suppe
5. Popular number—*Hula-Hula*	Wenrich
6. Intermezzo—*After Sunset*	Pryor
7. —*Silver Threads Among the Gold* (By request)	Danks
8. —*Medley of Remick's Hits*	Lampe
9. —*Take a Little Tip From Father*	Berlin & Snyder

OLIVER KIMBALL, *Acting Musical Director.*

The next concert will be given at Culebra, August 18, at 4.45 p. m.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday, and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m., in time to make connections for the 5.25 train at Panama.

Auction Sale of Calves and Dairy Cow at Ancon Hospital Dairy.

On Saturday, August 24, at 10 a. m., there will be sold at public sale at the Ancon Hospital dairy, ten calves between the ages of one and two and one-half months, and one dairy cow about five years old. Terms of sale, cash.

The dairy is located near the insane asylum buildings in the rear of the hospital grounds.

CHAS. F. MASON, *Superintendent.*

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Retail prices of cold storage provisions for the week beginning August 7, 1912:

FRESH MEATS.	Price.
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Plate, per pound	9
Corned, No. 1, per pound	14
Corned, No. 2, per pound	12
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	15
Rib roast, second cut (not under 3½ pounds,) per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	25
Venison (Imported), Stew, per pound	6
Forequarter (not under 6½ pounds), per pound	9
Rack (not under 5½ pounds), per pound	20
Saddle (not under 7½ lbs.), per pound	20
Leg (not under 9 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24

MISCELLANEOUS.	
Caviar, Russian in ¼-lb. jars, jar	89
Livers—Beef, per pound	11
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	13
Devonshire Farm, per pound	19
Sweetbreads—Beef, per pound	25
Eggs, fresh, dozen	27
one-half dozen only	14
Bluefish, per pound	11
Halibut, fresh, per pound	12
Salmon, fresh, per pound	†16
Fluke, fresh, per pound	10
Shads, fresh, each	50
Roes, shad, pair	25

POULTRY AND GAME.	
Chickens—Fancy roasting, milk fed, large, each	†1.40
Fancy roasting, milk fed, med., each	†1.10
Fancy roasting, corn fed, about 5½ pounds each	†1.15
Fancy roasting, corn fed, about 4½ pounds, each	†1.00
Fowls, each ††60, 70, 80, 90.	1.00
Ducks, Western, about 4½ pounds, each	1.35
Hens, milk fed, for roasting, about 3 pounds each	50
Broilers, milk fed, each	70
Broilers, corn fed, each	60
Turkeys, per pound	23
Squabs, each	35
Capons, each	2.10
Ducks, teal, per pair	50
Ducks, Blackhead, pair	60
Partridges, pair	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30

CURED AND PICKLED MEATS.	Price.
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	21
Half, for boiling, per pound	22
Boiled, per pound	28
Hocks, per pound	?8
Beef, salt, family, per pound	12
Bacon—Breakfast, whole piece, per pound	23
sliced, per pound	24
Pork, salt, family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18

DAIRY PRODUCTS.	
Butter—Creamery, special, per pound	38
Sheffield Farms, extra, fancy per lb.	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	22
Swiss, per pound	28
Edam, each	1.00
Parmesan, lb.	35
Neufchatel, cake	6
Gouda, per pound	34
Snappy, cake	10
Milk (Certified), per bottle	**20
Butter, bottle	**15
Fer-mil-lac, bottle	**20
Ice cream, quart	?25
½-gallon	?50

VEGETABLES AND FRUITS.	
Beets, per pound	5
Celery, per head	*10
Cabbage, per pound	4
Cucumbers, per pound	5
Carrots, per pound	5
Cauliflower, per pound	15
Lettuce, per pound	10
Onions, per pound	4
Potatoes, white, per pound	3½
sweet, per pound	3
Rhubarb, per pound	4
Squash, per pound	5
Turnips, per pound	4
Tomatoes, per pound	5
Yucca, per pound	3
Yams, per pound	3
Apples, per pound	10
Canteloupes, each	8
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Plums, per pound	10
Oranges, Jamaica, per dozen	12
Pineapples, each	10
Watermelons, each	*30
Peaches, per pound	8

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

††Fowls weigh each about as follows: 3, 3½, 4, 4½ and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight, is supplied and refund note sent for difference.

?Sold only from commissaries; no orders taken for delivery.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, August 3, 1912. All heights are in feet above mean sealevel.

Day and Date.	Station.			
	Vigia	Alhajuela	Gamboa	Gatun Lake.
Sun., July 28	125.8	92.3	44.4	30.7
Mon., July 29	128.0	94.0	45.9	30.6
Tues., July 30	134.8	98.8	51.6	30.8
Wed., July 31	130.3	96.4	51.4	31.6
Thurs., Aug. 1	127.0	93.6	46.3	31.9
Fri., Aug. 2	129.6	95.1	45.4	32.2
Sat., Aug. 3	129.8	95.3	46.6	32.6
Height of low water to the nearest foot	125.0	91.0	44.0	

Misdirected Letters.

ANCON, C. Z., August 7, 1912.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Abadie Brothers,
Ahearn, William J.
Blackburn, Mrs. Clara
Cheney, J. W.
Collymore, Lemuel
Cooke, Elisa R.
Dumhell, H. S.
Duyne, A.
Falkner, Geo.
Fernandez, Manuel
Galloway, J. W.
Garagate, José
Hake, Jacob E.
Harrold, Wm. H.
King, Mrs. Spencer C.
Lawrence, Thos. M.
Mercier, W. T.
Muchinon, George
Newbale, Michael H.
Noweeki, J. W.
O'Brien, Thomas
Parker, E. M.
Robertson, T. J.
Seoane, José Maria
Sonneman, Mrs. Otto F.
Standback, R. P.
Thomas, Archie
Vaught & Ready
White, T. A.
Wilson, Mrs. W.

Married.

WILSON-CASSIDEY—On Friday evening, August 2, at the residence of Mr. and Mrs. H. O. Cole, Corozal, by the Rev. Harry Compton, Miss Nellie Cassidey to Mr. Eugene Wilson. Canal Zone residence, Corozal.

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Allianca	P. R. R.	Friday	Aug.	2
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21
Allianca	P.R.R.	Tuesday	Aug.	27
Colon	P. R. R.	Tuesday	Sept.	3
Advance	P. R. R.	Monday	Sept.	9
Panama	P. R. R.	Saturday	Sept.	14
Allianca	P. R. R.	Friday	Sept.	20

CRISTOBAL TO NEW YORK.

Panama	P. R. R.	Friday	Aug.	9
Allianca	P. R. R.	Thursday	Aug.	15
Colon	P. R. R.	Wednesday	Aug.	21
Advance	P.R.R.	Tuesday	Aug.	27
Panama	P. R. R.	Tuesday	Sept.	3
Allianca	P. R. R.	Sunday	Sept.	8
Colon	P. R. R.	Sunday	Sept.	15
Advance	P. R. R.	Saturday	Sept.	21
Panama	P. R. R.	Friday	Sept.	27
Allianca	P. R. R.	Thursday	Oct.	3

NEW YORK TO COLON.

Almirante	U. F. C.	Wednesday	July	31
Carrillo	U. F. C.	Saturday	Aug.	3
Prinz Eitel Friedrich	H.-A.	Saturday	Aug.	3
Clyde	R. M.	Saturday	Aug.	3
Santa Marta	U. F. C.	Wednesday	Aug.	7
Turrialba	U. F. C.	Saturday	Aug.	10
Prinz August Wilhelm	H.-A.	Saturday	Aug.	10
Metapan	U. F. C.	Wednesday	Aug.	14
Oruba	R. M.	Saturday	Aug.	17
Prinz Sigismund	H.-A.	Saturday	Aug.	17
Tivives	U. F. C.	Saturday	Aug.	17
Zacapa	U. F. C.	Wednesday	Aug.	21
Prinz Joachim	H.-A.	Saturday	Aug.	24
Thames	R. M.	Saturday	Aug.	31
Almirante	U. F. C.	Wednesday	Aug.	28
Carrillo	U. F. C.	Saturday	Aug.	31
Prinz Eitel Friedrich	H.-A.	Saturday	Aug.	31
Santa Marta	U. F. C.	Wednesday	Sept.	4
Prinz August Wilhelm	H.-A.	Saturday	Sept.	7

COLON TO NEW YORK.

Zacapa	U. F. C.	Thursday	Aug.	8
Prinz Joachim	H.-A.	Monday	Aug.	12
Almirante	U. F. C.	Thursday	Aug.	15
Prinz Eitel Friedrich	H.-A.	Monday	Aug.	19
Thames	R. M.	Tuesday	Aug.	20
Carrillo	U. F. C.	Tuesday	Aug.	20
Santa Marta	U. F. C.	Thursday	Aug.	22
Prinz August Wilhelm	H.-A.	Monday	Aug.	26
Turrialba	U. F. C.	Tuesday	Aug.	27
Prinz Sigismund	H.-A.	Monday	Sept.	2
Trent	R. M.	Tuesday	Sept.	3
Tivives	U. F. C.	Tuesday	Sept.	3
Zacapa	U. F. C.	Thursday	Sept.	5
Prinz Joachim	H.-A.	Monday	Sept.	9

NEW ORLEANS TO COLON.

Orleanian	U. F. C.	Wednesday	Aug.	7
Parismina	U. F. C.	Saturday	Aug.	10
Abangarez	U. F. C.	Saturday	Aug.	17

COLON TO NEW ORLEANS

Ahangarez	U. F. C.	Thursday	Aug.	8
Atenas	U. F. C.	Thursday	Aug.	15
Heredia	U. F. C.	Thursday	Aug.	15

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 2 p. m.; for New Orleans, via Limon, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 2 p. m.

The following ships arrived at, or departed from, the port of Balboa during the week ending August 3:

Arrivals—July 29, *Oberon*, from Port Harford; July 29, *Pennsylvania*, from San Francisco; July 29, *Pachitea*, from Callao; July 30, *Limari*, from Valparaiso; July 31, *Manari*, from Buenaventura.

Departures—July 28, *San Juan*, to San Francisco; July 30, *Quito*, to Guayaquil; July 30, *Guatemala*, to Callao; July 30, *Huallaga*, to Callao; July 31, *Oberon* to Port Harford.

STATEMENT OF

CONSTRUCTION EXPENDITURES

TO JUNE 30, 1912

(Part II of The Canal Record, August 7, 1912.)

STATEMENT OF CONSTRUCTION EXPENDITURES TO JUNE 30, 1912

Table No. 1.

Includes administrative and general expenses, but does not include "General Items" or expenditures for sanitation, hospitals, or civil administration.

ITEMS.	FOURTH QUARTER, FISCAL YEAR 1912.			TO MARCH 31, 1911			TOTAL TO JUNE 30, 1912.		
	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
Atlantic Division—	Cubic Yards.								
1 Dry excavation, prism		*$4,987.23		2,181,998	$1,459,697.18	$0.6690	2,181,998	$1,454,789.95	$0.6667
2 Hydraulic excavation, prism				29,605	11,671.32	.3942	29,605	11,671.32	.3942
3 Dredging excavation, prism	927,002	277,571.21	$0.2994	27,915,953	6,679,158.20	.2393	28,842,955	6,956,729.41	.2412
Gatun Spillway—									
4 Dry excavation				1,544,202	$1,096,180.59	$0.7099	1,544,202	$1,096,180.59	$0.7099
5 Preparing foundations	1,978	3,374.99	$1.7062	42,113	93,092.52	2.2105	44,091	96,467.51	2.1879
6 Masonry	7,934	68,587.00	8.6447	194,479	1,521,711.18	7.8246	202,413	1,590,298.18	7.8567
7 Ironwork		50,084.11			64,033.76			114,117.87	
8 Back filling				24,716	12,456.18	.5400	24,716	12,456.18	.5400
9 Machinery		29,981.71						29,981.71	
Total		$152,027.81			$2,787,474.23			$2,939,502.04	
Gatun Dam—									
10 Dredging excavation				38,425	20,041.19	$0.5216	38,425	$20,041.19	$0.5216
11 Dry filling	707,083	$353,525.52	$0.5000	9,354,717	4,130,857.18	.4416	10,061,800	4,484,382.70	.4457
12 Hydraulic filling	559,610	214,271.02	.3829	9,954,637	2,934,991.38	.2948	10,514,247	3,149,262.40	.2995
13 Paving				40,411	14,719.69	.3642	40,411	14,719.69	.3642
Total		$567,796.54			$7,100,609.44			$7,668,405.98	
Gatun Locks—									
14 Dry excavation				4,555,395	$3,080,613.71	$0.6763	4,555,395	$3,080,613.71	$0.6763
15 Dredging excavation	339,354	$158,009.73	$0.4656	1,033,097	222,845.88	.2157	1,372,451	380,855.61	.2775
16 Preparing foundations, excavation				195,313	391,756.61	2.0029	195,313	391,756.61	2.0029
17 Preparing foundations, filling				40,117	15,226.73	.3796	40,117	15,226.73	.3796
18 Preparing foundations, concrete piling, (lineal feet)		*$443.26		83,670	135,015.62	1.6137	83,670	134,572.36	1.6084
19 Preparing foundations, wooden piling (lineal feet)				51,450	37,870.41	.7361	51,450	37,870.41	.7361
20 Filling around south approach wall, dry				7,072	3,777.61	.5342	7,072	3,777.61	.5342
21 Filling around south approach wall, hydraulic	265,842	42,782.17	.1609	328,653	51,295.32	.1561	594,495	94,077.49	.1582
22 Masonry	24,910	256,687.55	11.8017	1,850,524	13,654,111.82	7.3785	1,875,434	13,910,799.37	7.4173
23 Gates		232,310.04			789,473.33			1,021,783.37	
24 Ironwork		142,046.15			1,172,582.86			1,314,629.01	
25 Backfilling	199,219	130,146.77	.6533	1,262,855	651,101.89	.5156	1,462,074	781,248.66	.5343
26 Filling center wall	24,787	24,424.05	.9853	72,504	53,434.01	.7370	97,291	77,858.06	.8003
27 Operating machinery		275,911.64			277,925.67			553,837.31	
Total		$1,261,874.84			$20,537,031.47			$21,798,906.31	
Gatun power plant, (permanent)									
28 Dry excavation	50,284	$15,048.39	$0.2993	21,835	$13,711.63	$0.6280	72,119	$28,760.02	$0.3988
29 Machinery		8,855.00						8,855.00	
Total		$23,903.39			$13,711.63			$37,615.02	
Gatun-Mindi Levee—									
30 Dry fill				177,158	$68,985.15	$0.3894	177,158	$68,985.15	$0.3894
31 Hydraulic fill				20,398	3,483.32	.1708	20,398	3,483.32	.1708
Total					$72,468.47			$72,468.47	
32 Colon breakwater	132,961	$257,938.37	$1.9400	752,102	$1,406,029.97	$1.8695	885,063	$1,663,968.34	$1.8801
Total construction cost, Atlantic Division		$2,536,204.93			$40,067,851.91			$42,604,056.84	
33 Plant and equipment to be absorbed in construction costs after June 30 1912								$1,268,589.87	
Total expenditures, Atlantic Division								$43,872,646.71	
Central Division—									
34 Dry excavation, prism	4,402,435	$2,108,123.80	$0.4786	89,999,246	$74,205,238.00	$0.8245	94,401,681	$76,313,361.80	0$ 8084
35 Clearing Canal line, without excavation (acres)		2,110.34		2,280	139,316.41	61.1037	2,280	141,426.75	$62.0293
36 Dredging excavation					9,798.40			9,798.40	
37 Masonry				1,271	8,263.45	6.5015	1,271	8,263.45	6.5015
38 Masonry, cement gun facing (sq. yds.)				4,240	4,169.32	.9810	4,240	4,169.32	.9810
Total construction cost Central Division		$2,110,234.14			$74,366,785.58			$76,477,019.72	
39 Plant and equipment to be absorbed in construction costs after June 30 1911								$87,052.84	
Total expenditures, Central Division								$76,564,072.56	
Pacific Division—									
40 Dry excavation, prism	415,215	$325,482.75	$0.7839	887,203	$724,720.51	$0.8169	1,302,418	$1,050,203.26	$0.8063
41 Dredging excavation prism	856,018	202,515.42	.2366	31,615,241	7,650,284.69	.2420	32,471,259	7,852,800.11	.2418
42 Hydraulic excavation prism	254,293	142,352.33	.5598	843,980	514,076.16	.6091	1,098,273	656,428.49	.5977
Pedro Miguel Dam—									
43 Dry excavation	1,792	$2,334.12	$1.3025	6,219	$10,194.48	$1.6392	8,011	$12,528.60	$1.5639
44 Dry filling	104,471	54,789.15	.5245	477,970	237,404.73	.4967	582,441	292,193.88	.5017
Total		$57,123.27			$247,599.21			304,722.48	
Pedro Miguel Locks—									
45 Dry excavation	41,370	$11,908.09	$0.2878	1,088,866	$1,018,211.41	$0.9351	1,130,236	$1,030,119.50	$0.9114
46 Preparing foundations	3,919	12,206.24	3.1146	156,702	426,610.14	2.7224	160,621	438,816.38	2.7320
47 Masonry	30,257	238,627.68	7.8867	817,669	4,606,979.35	5.6343	847,926	4,845,607.03	5.7147
48 Gates		161,812.03			642,246.08			804,058.11	
49 Ironwork		21,146.45			612,077.73			633,224.18	
50 Backfilling	100,190	33,356.73	.3329	532,401	216,433.28	.4065	632,600	249,790.01	.3949
51 Filling center wall	2,900	4,942.97	1.7045	19,037	17,866.16	.9385	21,937	22,809.13	1.0397
52 Operating machinery		102,084.42			72,245.04			174,329.46	
Total		586,084.61			$7,612,669.19			$8,198,753.80	
Miraflores East Dam—									
53 Excavation		$1,012.64			$9,824.10			$10,836.74	
Miraflores West Dam—									
54 Dry filling	95,282	$36,769.88	$0.3964	1,146,342	$586,381.66	$0.5115	1,241,624	$624,151.54	$0.5027
55 Hydraulic filling		2,307.96			31,422.19			33,730.15	
56 Masonry, core wall		92.80			429.51			522.31	
57 Dry excavation					19,991.26			19,991.26	
Total		40,170.64			$638,224.62			$678,395.26	

*Denotes credit.

(Table 1—*Continued*)

ITEMS.	FOURTH QUARTER, FISCAL YEAR 1912.			TO MARCH 31, 1912.			TOTAL TO JUNE 30, 1911.		
	Quantities	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.	Quantities.	Amount.	Unit Cost.
Miraflores Spillway—									
58 Iron work		$19,227.00			$1,460.21			$2,0687.21	
Miraflores Locks—									
59 Dry excavation, diversions				5,885	$2,028.98	$0.3448	5,885	$2,028.98	$0.3448
60 Dry excavation, in locks	9,100	$6,200.62	$0.6814	2,213,482	2,058,455.11	.9300	2,222,582	2,064,655.73	.9289
61 Dredging excavation				309,647	142,379 66	.4598	309,647	142,379 66	.4598
62 Hydraulic excavation				332,703	195,299.02	.5870	332,703	195,299.02	.5870
63 Preparing foundations, excavation	38,886	67,826.91	1.7443	328,047	604,464.29	1.8426	366,933	672,291.20	1.8322
64 Preparing foundations, wooden piles ln ft.	6,580	28,298.36	4.3007		25,548.18		6,580	53,846.54	8.1834
65 Masonry	258,228	1,291,572 49	5.0017	767,875	3,850,257.70	5.0142	1,026,103	5,141,830.19	5.0110
66 Gates		104,839.23			47,460.06			152,299 29	
67 Iron work		41,387.35			763,207.31			804,594 66	
68 Backfilling	143,631	66,083.23	.4601	882,955	257,779.85	.2920	1,026,586	323 863 08	.3155
69 Filling centre wall	7,912	8,414 52	1.0635				7,912	8,414.52	1.0635
70 Operating machinery		111,471.14			55,588.68			167,059.82	
Total		$1,726,093.85			$8,002,468.84			$9,728,562 69	
La Boca Locks and Dams—(abandoned)									
71 Dry excavation				78,233	$158,343.29	$2.0240	78,233	$158,343 29	$2.0240
72 Construction dam					315,350.07			315,350.07	
73 Construction locks					159,306.40			159,306 40	
Total					632,999.76			$632,999.76	
74 Naos Island breakwater		$123,014.63			$69,930.84		782,021	$192,945.47	$2.4673
75 Terminal Facilities-Balboa		$151,998.74			$20,887.89			$172,886.63	
Total construction cost, Pacific Division		$3,375,075.88			$26,125,146 02			$29,500,221.90	
76 Plant and equipment to be absorbed in construction costs after June 30, 1912								$2,211,073 05	
Total expenditures, Pacific Division								$31,711,294.95	
77 Lighting and buoying canal		$30,835.72			$119,392.82			$150,228 54	
Total expenditures, constr. and eng'nr'g.								$152,298,242.76	

Item 22—There has been deducted from amount shown under Fourth Quarter $37,293.10, adjustment of difference in cement stock in prior periods. The unit cost shown includes this amount.

Item No. 36—Central Division, Dredging Excavation Prism, Preliminary Surveys.

Item No. 38—Represents operation of cement gun used in facing walls of the Cut.

Item No. 41—Pacific Division Division, Dredging Excavation Prism. The total cost of dredging plant was absorbed with the accounts for the month of April ,1911.

Item No. 44—Pacific Division, Pedro Miguel Dam, dry filling. Quantities shown to March have been reduced 90,573 cubic yards to adjust errors in previous periods.

Item No. 54—Pacific Division, Miraflores West Dam, dry filling. Quantities shown to March 31, 1912, have been reduced 11,495 cubic yards to adjust errors in previous periods.

Item No. 55—Pacific Division, Miraflores Dam, hydraulic filling. Expenditures represent cost of pipe line, flumes, etc. 661,048 cubic yards have been deposited in the dams from dredges and hydraulic dredging in locks chambers and in prism below the locks. The total expenses therefor have been charged to excavation.

Item 71, 72 and 73—Pacific Division, Laboca Locks and Dams. This expense was incurred prior to the adoption of Miraflores as the site for the lower locks and dam at the Pacific entrance of the Canal.

Item 33, 39 and 76—The expenditures for the plant and equipment are absorbed in the construction costs on the basis of estimated cost of the plant and estimated quantities of work to be done. The amounts shown under these items represent the balances which are to be absorbed into construction costs after June 30, 1912.

General—When excavated material is used for filling, such as dams, back filling, etc., the costs of dumping only is charged to the item benefited, other expenses being charged to Excavation.

DAM CONSTRUCTION.

Table No. 2.

Detailed cost per cubic yard for quarter ending June 30, 1912.

	GATUN DAM.				MIRAFLORES DAM.				PEDRO MIGUEL DAM.			
	April.	May.	June.	Total.	April.	May.	June.	Total.	April.	May.	June.	Total.
Excavation—Quantities—cubic yards										953	839	1,792
Excavation by hand										$1.0728	$0.9485	$1.0146
Maintenance of equipment										.1252	.1276	.1263
Division expense										.0525	.0610	.0565
Total division cost										$1.2505	$1.1371	$1.1974
Administrative and general expense										.1073	.1026	.1051
Total cost										$1 3578	$1.2397	$1.3025
Dry Fill—Quantities—cubic yards	286,956	227,017	193,110	707,083	26,292	31,220	37,770	95,282	67,385	21,782	15,304	104,471
Clearing site	$0.0003			$0.0001								
Excavation	.1137	$0.0912	$0.0698	.0945								
Tracks	.0808	.0759	.1215	.0903	$0.0902	$0.1696	$0 0606	$0.1045	$0 0308	$0.0812	$0.1594	$0 0602
Trestles	.0004	.0006	*.0004	.0002								
Transportation	.0737	.0774	.0787	.0763	.0486	.0560	.0560	.0540	.0252	.0504	.0865	.0394
Filling	.0597	.0658	.0469	.0582	.0902	.0699	.0424	.0646	.0384	.1080	.1868	.0746
Maintenance of equipment	.0394	.0547	.0685	.0523	.0433	.0580	0483	.0500	.0212	.0509	.0703	.0346
Plant arbitrary	.0710	.0710	.0710	.0710	.0900	.0900	.0900	.0900	.2900	.2900	.2900	.2900
Division expense	.0156	.0207	.0319	.0217	.0135	.0137	.0102	.0123	.0058	.0121	.0237	.0098
Total division cost	$0.4546	$0.4573	$0.4879	$0.4646	$0.3758	$0.4572	$0.3075	$0.3754	$0.4114	$0.5926	$0.8167	$0.5086
Administrative and general expense	.0347	.0356	.0362	.0354	.0193	.0278	.0166	.0210	.0086	.0234	.0372	.0159
Total cost	$0.4893	$0.4929	$0.5241	$0.5000	$0.3951	$0 4850	$0 3241	$0 3964	$0.4200	$0.6160	$0.8539	$0 5245
Hydraulic Fill—Quantities—cubic yards	204,189	194,733	160,688	559,610								
Clearing site	$0.0003			$0.0001								
Clearing for dredge	.0035	$0.0083	$0.0104	.0071								
Dredging	.1101	.1031	.1011	.1052								
Relay pumps	.0168	.0132	*.0153	.0151								
Pipe lines	.0137	.0100	.0143	.0125								
Wood flumes	.0009	.0016	.0016	.0729								
Power	.0860	.0736	.0554	.0014								
Small boats	.0039	.0035	.0024	.0033								
Maintenance of equipment	.0554	.0331	.0805	.0549								
Plant arbitrary	.0850	.0850	.0850	.0850								
Division expense	.0068	.0070	.0119	.0084								
Total division cost	$0.3827	$0.3384	$0 3779	$0.3659								
Administrative and general expense	.0145	.0166	.0206	.0170								
Total cost	$0.3972	$0.3550	$0.3985	$0.3829								

*Denotes credit

LOCKS AND SPILLWAYS CONSTRUCTION.

Table No. 3.

Detailed cost per cubic yard for quarter ending June 30, 1912:

ITEMS.	GATUN SPILLWAY.				GATUN LOCKS.				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS.			
	April.	May.	June.	Total.	April.	May.	June.	Total.	April.	May.	June.	Total.	April.	May.	June.	Total.
Dry excavation—Quantities—cubic yards	......	......	......	......	......	......	......	......	12,863	24,433	4,074	41,370	8,230	870	......	9,100
Drilling	......	......	......	......	......	......	......	......	......	......	......	......	$0.1099	$0.1698	......	$0.1156
Blasting	......	......	......	......	......	......	......	......	......	......	......	......	.0492	.0959	......	.0537
Loading by power	......	......	......	......	......	......	......	......	$0.0532	$0.0509	$0.2167	$0.0680	.1162	.2767	......	.1316
Tracks	......	......	......	......	......	......	......	......	.0179	.0362	.4673	.0730	.0975	.1005	......	.0978
Transportation	......	......	......	......	......	......	......	......	.0343	.0385	.0848	.0417	.0504	.0643	......	.0515
Dumps	......	......	......	......	......	......	......	......	......	.0009	.0030	.0008	......	......	......	......
Trestles	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Pumps	......	......	......	......	......	......	......	......	.0090	.0338	*.1167	.0113	.0331	.0509	......	.0348
Power	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Maintenance of equipment	......	......	......	......	......	......	......	......	.0284	.0553	.1037	.0517	.0598	.1104	......	.0647
Plant arbitrary	......	......	......	......	......	......	......	......	......	......	......	......	.0600	.0600	......	.0600
Division expense	......	......	......	......	......	......	......	......	.0065	.0093	.0471	.0121	.0233	.0270	......	.0237
Total division cost	......	......	......	......	......	......	......	......	$0.1493	$0.2249	$0.8059	$0.2586	$0.5994	$0.9555	......	$0.6334
Admin. and general expense	......	......	......	......	......	......	......	......	.0139	.0228	.1161	.0292	.0452	.0734	......	.0480
Total cost	......	......	......	......	......	......	......	......	$0.1632	$0 2477	$0.9220	$0.2878	$0.6446	$1.0289	......	$0.6814
Hydraulic Fill—Approach Wall Quantities, cubic yds.	......	......	......	......	162,457	103,385	......	265,842	......	......	......	......	......	......	......	......
Operation Dredges	......	......	......	......	$0.0482	$0.0745	......	$0.0584	......	......	......	......	......	......	......	......
Repairs to Dredges	......	......	......	......	.0051	.0048	......	.0050	......	......	......	......	......	......	......	......
Pipe Lines	......	......	......	......	0057	.0067	......	.0061	......	......	......	......	......	......	......	......
Plant Arbitrary	......	......	......	......	.0850	.0850	......	.0850	......	......	......	......	......	......	......	......
Division expenses	......	......	......	......	.0020	.0032	......	.0025	......	......	......	......	......	......	......	......
Total Div. Cost	......	......	......	......	$0.1460	$0.1742	......	$0.1570	......	......	......	......	......	......	......	......
Admin. and general expense.	......	......	......	......	.0030	.0055	......	.0039	......	......	......	......	......	......	......	......
Total Cost	......	......	......	......	$0.1490	$0.1797	......	$0.1609	......	......	......	......	......	......	......	......
Dredging Excavation–Quantities cubic yards	......	......	......	......	150,044	100,530	88,780	339,354	......	......	......	......	......	......	......	......
Operation Suction Dredges	......	......	......	......	$0.1587	$0.2353	$0.2239	$0.1985	......	......	......	......	......	......	......	......
Repairs Suction Dredges	......	......	......	......	.0405	.0451	.0684	.0492	......	......	......	......	......	......	......	......
Pipe Lines	......	......	......	......	.0115	.0132	.0262	.0159	......	......	......	......	......	......	......	......
Coffer Dams	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Dykes	......	......	......	......	......	......	.3216	.0840	......	......	......	......	......	......	......	......
Drilling	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Blasting	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Plant Abitrary	......	......	......	......	.0880	.0880	.0880	.0880	......	......	......	......	......	......	......	......
Division expense	......	......	......	......	.0045	.0082	.0140	.0081	......	......	......	......	......	......	......	......
Total Division Cost	......	......	......	......	$0.3032	$0.3898	$0.7421	$0.4437	......	......	......	......	......	......	......	......
Admin. and Gen. Expense	......	......	......	......	.0136	.0199	.0382	.0219	......	......	......	......	......	......	......	......
Total Cost	......	......	......	......	$0.3168	$0.4097	$0.7803	$0.4656	......	......	......	......	......	......	......	......
Preparing foundations, excavation—Quantities—cubic yards.	......	1,130	848	1,978	......	......	......	......	406	632	2,881	3,919	20,864	12,226	5,796	38,886
Drilling	......	......	......	......	......	......	......	......	$1.3862	$0.9033	$0.2613	$0.4814	$0.1046	$0.1839	......	$0.1139
Blasting	......	......	......	......	......	......	......	......	.6048	.7868	.0510	.2270	0469	.0240	......	.0328
Loading by power	......	......	......	......	......	......	......	......	......	......	.0412	.0303	.0730	.0343	$0.0054	.0509
Loading by hand	......	$1.1587	$1.3146	$1.2880	......	......	......	......	2.8881	2.1968	.6175	1.1074	.6299	7659	1.7437	.8387
Transportation	......	......	......	......	......	......	......	......	.1904	.0472	.0442	.0598	.0303	.0465	.1270	.0497
Tracks	......	.0114	......	.0065	......	......	......	......	1.3208	.1724	.4547	.4989	.1393	.0751	.0311	.1029
Dumps	......	......	......	......	......	......	......	......	......	......	.0650	.0478	.0288	.0142	......–	.0197
Pumps	......	......–	......	......	......	......	......	......	.0090	.0117	.0147	.0136	.0865	.1107	.2422	.1174
Coffer dams	......	.0382	.0007	.0501	......	......	......	......	......	......	......	......	......	......	......	......
Maintenance of equipment	......	.0065	......	.0037	......	......	......	......	.4452	.2604	.0663	.1368	.0986	.1249	.1605	.1162
Plant arbitrary	......	.0600	.0600	.0600	......	......	......	......	......	......	......	......	.0600	.0600	.0600	.0600
Division expense	......	.1007	.1416	.1239	......	......	......	......	.4155	.2380	.1142	.1654	.0718	.0757	.1445	.0839
Total division cost	......	$1.3755	$1.5169	$1.5322	......	......	......	......	$7.2600	$4.6166	$1.7301	$2.7684	$1.3697	$1.5152	$2.5144	$1.5861
Admin. and general expense	......	.1717	.1569	.1740	......	......	......	......	.8493	.5684	.2265	.3462	.1256	.1595	.2728	.1582
Total cost	......	$1.5472	$1.6738	$1.7062	......	......	......	......	$8.1093	$5.1850	$1.9566	$3.1146	$1.4953	$1.6747	$2.7872	$1.7443
Preparing foundations, wooden piling—Quanities—lin. ft.	......	......	......	......	......	......	......	......	......	......	......	......	......	1.995	4,585	6,580
Wooden piles in place	......	......	......	......	......	......	......	......	......	......	......	......	......	$0.1681	$0.2912	$3.9695
Division expense	......	......	......	......	......	......	......	......	......	......	......	......	......	.0110	.0103	.0456
Total division cost	......	......	......	......	......	......	......	......	......	......	......	......	......	$0.1791	$0.3015	$4.0151
Admin. and general expense	......	......	......	......	......	......	......	......	......	......	......	......	......	.0222	.0296	.2856
Total cost	......	......	......	......	......	......	......	......	......	......	......	......	......	$0.2013	$0.3311	$4.3007
Masonry.																
Concrete—Quantities—cubic yds.	3,392	1,920	2,622	7,934	5,481	3,506	1,225	10,212	3,906	3,180	3,421	10,507	93,476	87.014	63,178	243.668
Cement	$1.3974	$1.3301	$1.2572	$1.3348	$1.5068	$1.5391	$2.2541	$1.6075	$1.6455	$1.3547	$1.4678	$1.4997	$1.8811	$1.5526	$1.6860	$1.7132
Stone	1.7997	2.0610	2.1120	1.9662	1.9121	1.4322	1.8601	1.7411	.7348	.7067	.7255	.7233	.7347	.7068	.7246	.7221
Sand	1.0211	1.0059	1.0147	1.0153	.9181	.7837	.8640	.8655	.3290	.3103	.3149	.3188	.3290	.3102	.2986	.3144
Mixing	.4102	.5339	.4910	.4668	.4043	1.2144	1.1905	.7767	.4019	.4508	.4689	.4385	.2037	.2126	.2333	.2145
Total cost	$4.6284	$4.9309	$4.8749	$4.7831	$4.7413	$4.9694	$6.1687	$4.9908	$3.1112	$2.8225	$2.9771	$2.9803	$3.1485	$2.7822	$2.9425	$2.9642
Large Rock—Quantities—cubic yards	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Cost	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Masonry—Quantities—cubic yards	3,392	1,920	2,622	7,934	5,481	3,506	1,225	10,212	3,906	3,180	3,421	10,507	93.476	87,014	63,178	243,668
Concrete	$4.6284	$4.9309	$4.8749	$4.7831	$4.7413	$4.9694	$6.1687	$4.9908	$3.1112	$2.8225	$2.9771	$2.9803	$3.1485	$2.7822	$2.9425	$2.9642
Large rock	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
Wood forms	.8121	1.2588	1.1495	1.0317	1.4684	1.6367	3.6212	1.7844	.4064	1.1078	1.1993	.8768	.3597	.3171	.5718	.3995
Steel forms	......	......	......	......	.1290	.1435	.0397	.1233	......	......	......	......	.0366	.0254	.0232	.0292
Placing	1.0158	1.5413	1.1088	1.1737	1.4583	1.7293	3.9078	1.8452	.8916	1.0695	1.0494	.9968	.2253	.2100	.2412	.2240
Reinforcements	.0500	......	.0075	.0239	.0061	.0151	......	.0085	......	......	......	......	......	......	......	......
Pumps	.0071	.0025	.0044	.0051	.1549	......	......	.0831	.0090	.0182	.0146	.0136	.0331	.0509	.0403	.0413
Power	......	......	......	......	.1502	.2573	.4010	.2171	.0075	.0179	.0132	.0125	.0210	.0220	.0263	.0227

*Denotes Credit

Table No. 3—(Continued)

ITEMS.	GATUN SPILLWAY.				GATUN LOCKS.				PEDRO MIGUEL LOCKS.				MIRAFLORES LOCKS.			
	April	May	June	Total.	April	May	June	Total.	April	May	June	Total.	April	May	June	Total.
Masonry—Continued.																
Coffer dams	.0054	.0075	.0001	.0042	......	......	......	......	......	......	......	......	......	......	......	......
Maintenance of equipment	.3879	.4950	.2678	.3740	.3306	.8675	2.2040	.7396	.1612	.1660	.1907	.1722	.1125	.1272	.1631	.1309
Plant arbitrary	.4360	.4360	.4360	.4360	.9670	.9670	.9670	.9670	.5709	.5800	.5791	.5763	.5500	.5500	.5500	5500
Division expense	.1537	.2307	.2324	.1984	.2594	.3710	.8712	.3711	.1479	.1594	.1741	.1599	.0611	.0625	.0810	.0667
Total division cost	$7.4964	$8.9027	$8.0814	$8.0301	$9.6652	10.9563	18.1806	11.1301	$5.3057	$5.9413	$6.1975	$5.7884	$4.5478	$4.1473	$4.6394	$4.4285
Admin. and general expense	.4509	.8722	.6378	.6146	.6634	1.0441	2.2376	.9829	.3533	.4684	.5022	.4366	.2120	.2022	.2717	.2240
Total cost	$7.9473	$9.7749	$8.7192	$8 6447	10 3286	12.0009	20.4182	12.1130	$5.6590	$6 4097	$6.6997	$6.2250	$4 7598	$4.3495	$4.9111	$4 6525
Masonry, reinforced—Quantities—cubic yards	......	......	......	......	6,119	4,000	4,579	14,698	5,554	7,556	6,640	19,750	4,259	5,081	5,220	14,560
Cement	......	......	......	......	$1.8165	$1.8703	$1.8992	$1.8569	$2.2678	$1.9275	$2–0976	$2.0804	$2.1804	$1.7813	$2.0347	$1.9889
Stone	......	......	......	......	1.8725	1.6956	2.0450	1.8781	.7032	.6764	.6941	.6898	.7032	.6766	.6942	.6906
Sand	......	......	......	......	.8781	.7670	.8574	.8414	.3080	.2904	.2948	.2968	.3080	.2904	.2948	.2972
Mixing	......	......	......	......	.3572	.4398	.5038	.4254	.4503	.4682	.5711	.4976	.7210	.7106	.8041	7472
Wood forms	......	......	......	......	2.4656	3.1006	2.5335	2.6596	2.2127	1.5369	1.4906	1.7113	1.3610	2.6787	2.8876	2.3681
Steel forms	......	......	......	......	.0770	.1156	.0066	.0656	......	......	......	......	.5860	.2113	.0249	.2541
Power	......	......	......	......	.1129	.0459	.0420	.0725	.0066	.0024	.0010	.0031	.0065	.0057	.0063	.0062
Placing	......	......	......	......	.7544	.9505	.8537	.8387	1.0705	.7532	.6846	.8193	.5835	.9235	1.0699	.8764
Reinforcements	......	......	......	......	.2864	.7900	.8694	.6051	1.3660	.9671	1.0102	1.0937	1.1848	2.2754	1.9504	1.8398
Pumps	......	......	......	......	......	......	......	......	.0090	.0124	.0146	.0122	.1007	.0154	.0403	.0493
Maintenance of equipment	......	......	......	......	.1496	.2480	.1883	.1884	.1222	.0668	.1004	.0937	.0862	.0805	.1066	.0915
Plant arbitrary	......	......	......	......	.9670	.9670	.9670	.9670	.5680	.5623	.5615	.5641	.5500	.5500	.5500	.5500
Division expense	......	......	......	......	.2454	.3451	.4111	.3241	.2586	.2118	.2511	.2382	.2060	.2898	.3808	.2979
Total division cost	......	......	......	......	$9.9826	11.3354	11.1770	10.7228	$9.3429	$7.4754	$7.7716	$8.1002	$8.5773	10.4890	10.8446	10.0572
Admin. and general expense	......	......	......	......	.6543	1 0761	.9542	.8626	.7462	.6056	.6811	.6705	.5664	.8096	.9473	.7878
Total cost	......	......	......	......	10.6369	12.4115	12.1312	11.5854	10.0891	$8 0810	$8.4527	$8.7707	$9.1437	11.2986	11.7919	10.8450
Total Masonry—Quantities—cubic yards	3,392	1,920	2,622	7,934	11,600	7,506	5,804	24,910	9,460	10,736	10,061	30,257	97,735	92,095	68,398	258,228
Total cost	$7.9473	$9.7749	$8.7192	$8.6447	10.4912	12.2198	13.8802	11.8017	$8.2600	$7.5860	$6.8566	$7.8867	$4.9509	$4.7328	$5.4362	$5.0017
Back filling—Quantities—cubic yards	......	......	......	......	51,555	66,579	81,085	199,219	33,822	43,440	22,937	100,199	43,980	38,541	61,110	143,631
Drilling	......	......	......	......	$0.0198	$0.0417	$0.0151	$0.0253	......	......	......	......	......	......	......	......
Blasting	......	......	......	......	.0267	.0266	.0399	.0321	......	......	......	......	......	......	......	......
Loading	......	......	......	......	.0430	.0332	.0482	.0433	......	......	......	......	......	......	......	......
Tracks	......	......	......	......	.0682	.1797	.1382	.1339	$0.0061	$0.0378	$0.0953	$0.0403	$0.0977	$0.1724	$0.1066	$0.1215
Transportation	......	......	......	......	.0748	.1376	.2004	.1469	.0254	.0367	.0620	.0387	.0582	.0687	.0690	.0656
Filling	......	......	......	......	.0808	.0926	.0886	.0879	.0928	.1010	.0869	.0950	.0567	.0573	0602	.0583
Maintenance of equipment	......	......	......	......	.0483	.0497	.0524	.0504	.0242	.0424	.0571	.0396	.0413	.0621	.0528	.0518
Plant arbitrary	......	......	......	......	.0600	.0600	.0600	.0600	.0900	.0900	.0900	.0900	.1200	.1200	.1200	.1200
Division expense	......	......	......	......	.0177	.0263	.0337	.0271	.0052	.0088	.0147	.0089	.0134	.0161	.0142	.0145
Total division cost	......	......	......	......	$0.4393	$0.6474	$0.6765	$0.6069	$0.2437	$0.3167	$0.4060	$0.3125	$0.3873	$0.4966	$0.4228	$0.4317
Admin. and general expense	......	......	......	......	.0334	.0545	.0480	.0464	.0107	.0222	.0313	.0204	.0228	.0350	.0282	.0284
Total cost	......	......	......	......	$0.4727	$0.7019	$0.7245	$0.6533	$0.2544	$0.3389	$0.4373	$0.3329	$0.4101	$0.5316	$0.4510	$0.4601
Filling center wall—Quantities—cubic yards	......	......	......	......	12,982	6,474	5,331	24,787	......	......	2,900	2,900	......	570	7,342	7,912
Loading	......	......	......	......	$0.0820	$0.1225	$0.1037	$0.0973	......	......	......	......	......	......	......	......
Tracks	......	......	......	......	.0412	.1770	.1395	.0977	......	......	$0.0274	$1.0340	......	......	......	......
Transportation	......	......	......	......	.1211	.1944	.2578	.1696	......	......	.0553	.0553	......	......	$0.1420	$0.1318
Filling	......	......	......	......	.0888	.1538	.1256	.1137	......	......	.2465	.2465	......	$1.4514	.6164	.6766
Power	......	......	......	......	......	......	......	......	......	......	......	......	......	......	.0136	.0126
Maintenance of equipment	......	......	......	......	.0852	.1291	.1643	.1137	......	......	.0534	.0534	......	.0010	.0484	.0456
Plant arbitrary	......	......	......	......	.3310	.3310	.3310	.3310	......	......	.0900	.0900	......	.1200	.1200	.1200
Division expense	......	......	......	......	.0143	.0312	.0475	.0259	......	......	.0227	.0647	......	.1052	.0205	.0266
Total division cost	......	......	......	......	$0.7636	$1.1390	$1.1694	$0.9489	......	......	$0.4953	$1.5439	......	$1.6776	$0.9609	$1.0126
Admin. and general expense	......	......	......	......	.0215	.0533	.0522	.0364	......	......	.0474	.1606	......	.2034	.0391	.0509
Total cost	......	......	......	......	$0.7851	$1.1923	$1.2216	$0.9853	......	......	$0.5427	$1.7045	......	$1.8810	$1.0000	$1.0635

DRY EXCAVATION—PRISM.

Table No. 4.

Detailed cost per cubic yard for quarter ending June 30, 1912.

ITEMS.	ATLANTIC DIVISION.				CENTRAL DIVISION.				PACIFIC DIVISION.			
	April.	May.	June.	Total.	April.	May.	June.	Total.	April.	May.	June.	Total.
Dry excavation—Quantities—cubic yards	....	....	....	....	1,617,195	1,412,380	1,357,204	4,386,779	152,754	140,163	122,298	415,215
Clearing	....	....	....	....	....	....	....	....	....	....	....	....
Drilling	....	....	....	....	$0.0455	$0.0478	$0.0189	$0.0473	$0.0645	$0.0927	$0.1131	$0.0883
Blasting	....	....	....	....	.0504	.0557	.0557	.0538	.0289	.0524	.0382	.0396
Loading	....	....	....	....	.0480	.0519	.0519	.0504	.0895	.0977	.1304	.1043
Tracks	....	....	....	....	.0606	.0736	.0617	.0651	.1034	.0944	.1752	.1215
Transportation	....	....	....	....	.0701	.0847	.0770	.0769	.0452	.0529	.0747	.0565
Dumps	....	....	....	....	.0441	.0496	.0277*	.0237	....	.0003	....	.0001
Pumps	....	....	....	....	.0065	.0032	.0025	.0042	.0554	.0376	.0337	.0430
Maintenance of equipment	....	....	....	....	.0724	.0835	.0757	.0770	.0480	.0830	.1032	.0761
Plant arbitrary	....	....	....	....	.0300	.0300	.0300	.0300	.1937	.1900	.1900	.1914
Division expense	....	....	....	....	.0255	.0138	.0114	.0174	.0180	.0200	.0290	.0219
Total division cost	....	....	....	....	$0.4531	$0.4938	$0.3871	$0.4458	$0.6466	$0.7210	$0.8875	$0.7427
Administrative and general expense	....	....	....	....	.0351	.0373	.0336	.0336	.0307	.0403	.0553	.0412
Total cost	....	....	....	....	$0.4836	$0.5311	$0.4207	$0.4794	$0.6773	$0.7613	$0.9428	$0.7839
Dry excavation—Prism, by contract—Quantities—cubic yards	....	....	....	....	9,752	5,904	....	15,656	....	....	....	....
Contract cost	....	....	....	....	$0.2983	$0.3013	....	$0.2994	....	....	....	....
Plant arbitrary	....	....	....	....	.0300	.0300	....	.0300	....	....	....	....
Total cost	....	....	....	....	$0.3283	$0.3313	....	$0.3294	....	....	....	....
Total dry excavation—Quantites—cubic yards	....	....	....	....	1,626,947	1,418,284	1,357,204	4,402,435	152,754	140,163	122,298	415,215
Unit cost	....	....	....	....	$0.4826	$0.5302	$0.4207	$0.4786	$0.6773	$0.7613	$0.9428	$0.7839

*Denotes credit.

The credit shown in June, under "Dumps"—Central Division, is due to credit for excess cost of dumping excavated material at Naos Island Breakwater from October 1908, to June 1912, inclusive, $95,347.25. Eliminating this credit, "Dumps" would show a cost of $0.0433 for June, and $0.0447 for the quarter and "Total Cost" for June would be $0.4916, and for the quarter $0.5005.

DREDGING EXCAVATION—PRISM.

Table No. 5.

Detailed cost per cubic yard for quarter ending June 30, 1912.

ITEMS.	ATLANTIC DIVISION.								PACIFIC DIVISION.							
	April.		May.		June.		Total.		April.		May.		June.		Total.	
	Quantities, cu. yds.	Unit cost	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost.	Quantities, cu. yds.	Unit cost	Quantities, cu. yds.	Unit cost.
Clearing	253,572	$0.0012	329,626	....	343,804	....	927,002	$0.0003	....	....	....	....	....	....	....	....
Op'n, seagoing suction dredge	137,256	.0448	247,835	$0.0458	252,974	$0.0442	638,065	.0449	230,878	$0.0461	160,251	$0.0576	187,208	$0.060	578,337	$0.0538
R'p'rs, seagoing suction dredge	137,256	.0781	247,835	.0115	252,974	.0066	638,065	.0239	230,878	.0049	160,251	.0247	187,208	.0127	578,337	.0129
Op'n, small ladder dredges	42,118	.0991	58,683	.1325	58,057	.0973	158,858	.1108	35,348	.110	115,858	1536	29,148	.188	80,354	.1471
Repairs, small ladder dredges	42,118	.4208	58,683	*0099	58,057	.1358	158,858	.1575	35,348	.0445	115,858	.0331	29,148	.0509	80,354	.0446
Op'n, 5-yd. ladder dredge	....	....	....	....	....	....	....	....	14,841	.236	115,061	.0705	23,724	.113	153,626	.0932
Repairs, 5-yd. ladder dredge	....	....	....	....	....	....	....	....	14,841	.567	115,061	.0558	23,724	.2419	153,626	.1340
Operation, dipper dredges	74,198	.0933	23,108	.1131	32,773	.1006	130,079	.0986	14,201	.154	10,250	.1595	19,250	.174	43,701	.1644
Repairs, dipper dredges	74,198	.0733	23,108	.0452	32,773	.2373	130,079	.1096	14,201	.351	10,250	.4070	19,250	.223	43,701	.3080
Operation, pipe line dredges	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Repairs, pipe line dredges	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pipe lines	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Dykes	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Op'n, tugs, clapets and scows	116,316	.1246	81,791	.0617	90,830	.1002	288,937	.0991	64 390	.0592	141,169	.0652	72,122	.098	277,681	.0724
R'p'rs, tugs, clapets, and scows	116,316	.0562	81,791	.2873	90,830	.1208	288,937	.1419	64,390	.0068	141,169	.0129	72,122	.0108	277,681	.0109
Drilling	76,540	.0977	73,090	.0488	77,733	.0412	227,363	.0627	....	....	....	....	....	....	....	....
Blasting	76,540	.1036	73,090	0950	77,733	.0829	229,363	.0938	....	....	....	....	....	....	....	....
Operation, drill barges	....	....	....	....	....	....	....	....	24,824	.3864	78,501	.1244	31,787	.309	135,112	.2160
Operation, rock breakers	....	....	....	....	....	....	....	....	24,824	.0609	78,501	.0178	31,787	.034	135,112	.0296
Small boats	253,572	.0044	329,626	.0026	343,804	0023	927,002	0030	295,268	.0043	301,420	.0054	259,330	.0079	856,018	.0058
Repairs, misc. equipment	253,572	.0036	329,626	.0017	343,804	.0026	927,002	.0025	295,268	.0144	301,420	.0055	259,330	.007	856,018	.0091
Plant arbitrary	253,572	.0470	329,626	.0470	343,804	.0470	927,002	.0470	....	....	....	....	....	....	....	....
Division expense	253,572	.0157	329,626	.0057	343,804	0112	927,002	.0105	295,268	.0053	301,420	.0054	259,330	.007	856,018	.0059
Total division cost	253,572	$0.4423	329,626	$0.251	343,804	$0.1757	927,002	$0.2756	295,268	$0.1991	301,420	$0.2109	259,330	$0.236	856,018	$0.2145
Admin and general expense	253,572	.0329	329,626	.018	343,804	.0227	927,002	.0238	295,268	.021	301,420	.0214	259,330	.023	856,018	.0221
Total cost	253,572	$0.4752	329,626	$0.269	343,804	$0.1984	927,002	$0.2994	295,268	$0.220	301,420	$0.2323	259,330	$0.259	856,018	$0.2366
Earth excavation—per cent	177,032	69.82	256,536	77.8	266,071	77.39	699,639	75.47	270,444	91.5	222,919	73.96	227,543	87.7	720 906	84.22
Rock excavation—per cent	76,540	30.18	73,090	22.1	77,733	22.61	227,363	24.53	24,824	8.41	78,501	26.04	31,787	12.2	135,112	15.78

NOTE—Low total cost in June in Atlantic Division is due to credit of $28,466.19 to "Dykes" being proportion chargeable to Dredging Excavation in Gatun Lock site.
*Denotes credit.

STONE PRODUCTION.

Table No. 6.

Detailed cost per cubic yard for quarter ending June 30, 1912.

	Porto Bello Quarry.				Ancon Quarry.			
	April.	May.	June.	Total.	April.	May.	June.	Total.
Quarrying—Quantities—cubic yards	46,172	....	273	46,445	82,770	102,302	68,462	253,534
Stripping	$0.0149*	....	....	$0.0168*	$0.0443	$0.0362	$0.0306	$0.0373
Drilling	.0027	....	....	.0050	.0848	.0409	.0537	.0587
Blasting	.1132	....	....	.1094	.0635	.0366	.0523	.0496
Loading	.0724	....	....	.0719	.0417	.0340	.0375	.0375
Transportation	.0518	....	....	.0515	.0641	.0519	.0818	.0640
Tracks	.0335	....	....	.0391	.0572	.0376	.0519	.0479
Power	.0335	....	....	.0338	....	....	....	....
Maintenance of equipment	.0441	....	....	.0384	.0601	.1070	.0824	.0850
Plant arbitrary	.6660	....	....	.3812	.1500	.1500	.1500	.1500
Total	$1.0023	....	....	$0.7135	$0.5657	$0.4942	$0.5402	$0.5300
Crushing—Quantities—cubic yards	46,172	....	273	46,445	82,770	102,302	68,462	253,534
Operation, crushers	$0.0240	....	....	$0.0238	$0.0181	$0.0182	$0.0074	$0.0152
Stone bins and conveyors	.0121	....	....	.0121	.0047	.0057	.0039	.0049
Power	.0417	....	....	.0419	.0168	.0218	.0162	.0187
Maintenance of equipment	.0357	....	....	0417	.0096	.0320	.0569	.0314
Plant arbitrary	.3430	....	....	.1963	.0465	.0466	.0463	.0465
Total	$0.4565	....	....	$0.3158	$0.0957	$0.1243	$0.1307	$0.1167
Total cost of production	$1.4588	....	....	$1.0293	$0.6614	$0.6185	$0.6709	$0.6467
Towing—Quantities—cubic yards	46,172	....	273	46,445	....	....	....	....
Operation, tugs and barges	$0.1205	....	....	$0.1209	....	....	....	....
Maintenance of equipment	.1470	....	....	.1991	....	....	....	....
Plant arbitrary	.1190	....	....	.1183	....	....	....	....
Total	$0.3865	....	....	$0.4383	....	....	....	....
Unloading—Quantities—cubic yards	46,172	....	273	46,445	....	....	....	....
Operation, cableways and cranes	$0.0718	....	....	$0.0919	....	....	....	....
Power	.0204	....	....	.0208	....	....	....	....
Maintenance of equipment	.0391	....	....	.0482	....	....	....	....
Plant arbitrary	.4530	....	....	.4503	....	....	....	....
Total	$0.5843	....	....	$0.6112	....	....	....	....
Rail transportation to storage—Quantities—cubic yards	9,546	206	....	9,752	82,770	102,302	68,462	253,534
Operation of trains	$0.0741	$0.2002	....	$0.0769	$0.0351	$0.0262	$0.0358	$0.0317
Repairs to tracks	....	.0868	....	.0018	....	.0002	....	.001
Dumping in storage	....	....	....	....	.0126	.0113	.0096	.0113
Maintenance of equipment	.1145	.1822	....	.1159	.0234	.0209	.0261	.0231
Plant arbitrary	....	....	....	....	.0500	.0500	.0500	.0500
Total	$0.1886	$0.4692	....	$0.1946	$0.1211	$0.1086	$0.1215	$0.1162
Division expense	$0.0203	....	....	$0.0209	$0.0213	$0.0165	$0.0210	$0.0192
Total cost in storage	$2.4888	....	....	$2.1405	$0.8038	$0.7436	$0.8134	$0.7821

*Denotes Credit.

Note.—The production of crushed rock at Porto Bello ceased on April 30, 1912. Quantity shown in June is correction of amount reported in January. During May and June various charges and credits were made to the account for adjustments etc., hence averages shown for quarter do not agree with averages for April.

SAND PRODUCTION.

Table No. 7.

Detailed cost per cubic yard for quarter ending June 30, 1912.

Items.	Gatun.				Chamé.			
	April.	May.	June.	Total.	April.	May.	June.	Total.
Dredging—Quantities—cubic yards	....	10,252	30,279	40,531	51,245	65,641	59,538	176,424
Operation, dredges	....	$0.2161	$0.1830	$0.1915	$0.0982	$0.0696	$0.0770	$0.0804
Maintenance of equipment	....	.0263	.0495	.0436	.0281	.0213	.0270	.0252
Total	....	$0.2424	$0.2325	$0.2351	$0.1263	$0.0909	$0.1040	$0.1056
Plant arbitrary	....	$0.7760	$0.7641	$0.7671	$0.0100	$0.0100	$0.0100	$0.0100
Total cost of production	....	$1.0184	$0.9966	$1.0022	$0.1363	$0.1009	$0.1140	$0.1156
Towing—Quantities—cubic yards	....	8,550	30,210	38,760	51,245	65,641	59,538	176,424
Operation, tugs and barges	....	$0.1525	$0.0447	$0.0684	$0.0762	$0.0991	$0.0917	$0.0899
Maintenance of equipment	....	0792	.0060	.0222	.0425	.0319	.1042	.0594
Plant arbitrary	....	....	....	....	.0200	.0200	.0200	.0200
Total	....	$0.2317	$0.0507	$0.0906	$0.1387	$0.1510	$0.2159	$0.1693
Unloading—Quantities—cubic yards	....	8,550	30,210	38,760	51,245	65,641	59,538	176,424
Operation, cableways and cranes	....	$0.0660	$0.0507	$0.0541	$0.0566	$0.0540	$0.0683	$0.0595
Power	....	.0107	.0171	.0157	.0154	.0081	.0151	.0126
Maintenance of equipment	....	.0559	.0458	.0480	.0290	0431	.0510	.0417
Plant arbitrary	....	....	....	....	.0332	.0330	.0333	.0332
Total	....	$0.1326	$0.1136	$0.1178	$0.1342	$0.1382	$0.1677	$0.1470
Rail Transportation to Storage—Quantities—cubic yards	....	1,702	69	1,771	51,245	65,641	59,538	176,424
Operation of cranes	....	$0.2262	....	$0.2174	....	....	....	....
Operation of trains	....	.0628	....	.0604	$0.0433	$0.0362	$0.0375	$0.0387
Repairs to tracks	....	.6055	$8.4058	.9094	.0356	.0072	.0235	.0209
Dumping in storage	....	....	....	....	.0153	.0109	.0106	.0121
Maintenance of equipment	....	.2134	1.9094	.2795	.0293	.0306	.0287	.0296
Plant arbitrary	....	....	....	....	.0700	.0700	.0700	.0700
Total	....	$1.1079	$10.3152	$1.4667	$0.1935	$0.1549	$0.1703	$0.1713
Division expense	....	$0.0272	$0.0167	$0.0194	$0.0133	$0.0112	$0.0145	$0.0129
Total cost in storage	....	$1.5334	$1.2608	$1.2850	$0.6160	$0.5562	$0.6824	$0.6161

HYDRAULIC EXCAVATION—PRISM.

Table No. 8.

Detailed cost per cubic yard for quarter ending June 30, 1912.

ITEMS.	ATLANTIC DIVISION.				PACIFIC DIVISION.			
	April.	May.	June.	Total.	April.	May.	June.	Total.
Quantities—cubic yards	....	....	....	....	88,727	86,890	78,676	254,293
Clearing	....	....	....	....	....	$0.0041	....	$0.0014
Drilling	....	....	....	....	....	....	....	....
Blasting	....	....	....	....	....	....	$0.0009	.0003
Pumping station	....	....	....	....	$0.0706	.0728	0773	.0735
Pipe lines and monitors	....	....	....	....	.0258	.0661	.0240	.0390
Dredging pumps	....	....	....	....	.0593	.0987	.0483	.0694
Relay pumps	....	....	....	....	....	....	....	....
Dykes	....	....	....	....	.0168	.0270	.0535	.0317
Maintenance of equipment	....	....	....	....	.0590	.0610	.1281	.0810
Power	....	....	....	....	.1070	.1261	.1300	.1206
Plant arbitrary	....	....	....	....	.1038	.1054	.1067	.1052
Division expense	....	....	....	....	.0094	0120	.0144	.0118
Total division cost	....	....	....	....	$0.4517	$0.5732	$0.5832	$0.5339
Administrative and general expense	....	....	....	....	.0185	.0284	.0314	.0259
Total cost	....	....	....	....	$0.4702	$0.6016	$0.6146	$0.5598

COLON BREAKWATER.

Table No. 9.

ITEMS.	COLON BREAKWATER.			
	Arpil.	May.	June.	Total.
Toro Point Fill.				
Excavation—Quantities—Cubic yards	46,583	44,009	19,092	109,684
Surveys	....	$0.0001*	....	....
Clearing	....	....	....	....
Drilling	$0.0328	.0289	$0.0431	$0.0330
Blasting	.0899	.0736	.0499	.0764
Loading by power	.0750	.1000	.0682	.0838
Tracks	.0045	.0317	.0448	.0225
Transportation	.0622	.0638	.0961	.0687
Maintenance of equipment	.0460	.0468	.0661	.0498
Total	$0.3104	$0.3447	$0.3682	$0.3342
Filling—Quantities—Cubic yards	46,583	44,009	19,092	109,684
Trestles	$0.3594	$0.4349	$0.2618	$0.3727
Dumping	.0068	.0068	.0063	.0067
Maintenance of equipment	.0074	.0080	.0100	.0081
Total	$0.3736	$0.4497	$0.2781	$0.3875
Plant arbitrary	$0.2960	$0.2960	$0.2960	$0.2960
Division expense	.0230	.0273	.0496	.0294
Tug service	.0639	.0828	.1148	.0803
Total division cost	$1.0669	$1.2005	$1.1067	$1.1274
Administrative and general expenses	.0908	.0994	.1011	.0961
Total cost filling	$1.1577	$1.2999	$1.2078	$1.2235
Porto Bello Large Rock				
Quarrying—Quantities—cubic yards	8,380	7,532	7,365	23,277
Stripping	$0.2666	$0.7948	$1.0290	$0.6787
Drilling	.1907	.2614	.2614	.2360
Blasting	.2715	.2492	.3159	.2783
Loading	.3784	.2320	.2421	.2879
Transportation	.2416	.1802	.1630	.1969
Porto Bello Large Rock—*Continued.*				
Tracks	.1618	.2484	.2664	.2229
Loading on barges	.1620	.0955	.1299	.1303
Power	.0409	.1877	.2446	.1529
Maintenance of equipment	.3872	.7373	.6055	.5696
Plant arbitrary	.2340	.2340	.2340	.2340
Total	$2.3347	$3.2205	$3.4918	$2.9875
Towing—Quantities—cubic yards	8,380	7,532	7,365	23,277
Operation, tugs and barges	$0.2852	$0.4780	$0.5047	$0.4171
Maintenance of equipment	.0425	.2674	.1659	.1543
Plant arbitrary	.4040	.4040	.4040	.4040
Total	$0.7317	$1.1494	$1.0746	$0.9754
Placing—Quantities—cubic yards	8,380	7,532	7,365	23,277
Operation of floating derricks	....	$0.0870	$0.0688	$0.0499
Operation, cranes	$0.1851	.1961	.2029	.1943
Operation, trains	.1088	.1221	.0860	.1059
Dumping	.0176	.0331	.0242	.0247
Maintenance of equipment	.1545	.2502	.1972	.1990
Plant arbitrary	.1290	.1290	.1290	.1290
Total	$0.5950	$0.8175	$0.7081	$0.7028
Division expense	$0.1522	$0.2775	$0.3443	$0.2534
Total division cost	$3.8136	$5.4649	$5.6188	$4.9191
Administrative and general expense	.2919	.5285	.3820	.3970
Total cost, large rock	$4.1055	$5.9934	$6.0008	$5.3161
Total material placed—Quantities—cubic yds	54,963	51,541	26,457	132,961
Total cost	$1.6071	$1.9858	$2.5421	$1.9400

*Denotes Credit

PERMANENT POWER HOUSE—GATUN.

Table No. 10.

	April.	May.	June.	Total.
Dry Excavation—Quantities—Cubic Yards	....	22,981	27,303	50,284
Clearing	....	$0.0101	....	$0.0050
Drilling	....	....	....	....
Blasting	....	....	....	....
Loading	....	.0339	$0.0359	.0350
Tracks	....	.0700	.0407	.0540
Transportation	....	.0627	.0669	.0650
Maintenance and Equipment	....	.0463	.0549	.0510
Plant arbitrary	....	.0600	.0600	.0600
Division expense	....	.0122	.0120	.0121
Total Division cost	....	$0.2961	$0.2704	$0.2821
Administration and General expense	....	.0219	.0131	.0172
Total	....	$0.3180	$0.2835	$0.2993

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, AUGUST 14, 1912. No. 51.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Revised Estimate of Excavation.

The estimates of excavation remaining to be done after July 1, 1912, in order to complete the Canal, show an increase of 16,903,000 cubic yards over the estimate of July 1, 1911.

In the Atlantic Division, the increase is 295,000 cubic yards, chiefly to provide for silting in the finished channel not covered by the estimate of July 1, 1911.

In the Central Division, an increase of 4,615,000 cubic yards is made to provide for an extension of slides, and changes in the Obispo Diversion.

The Pacific Division has an increase of 11,993,000 cubic yards, of which 3,199,000 cubic yards are to cover excavation in the Canal prism, in the locks and dams, and silting in the finished channel, which has become necessary since the estimate of July 1, 1911. The remainder—8,794,000 cubic yards— is for the newly begun excavation for the drydock, coaling station, and terminal at Balboa.

Canal Work in July.

The grand total of Canal excavation to August 1 was 175,901,052 cubic yards, leaving to be excavated 36,325,948 cubic yards, or about one-sixth of the entire amount necessary for the completed Canal. This shows an increase over the amount reported to be remaining at the end of June. and is due to additions made to the total of Canal excavation as set forth in another place in this issue of THE CANAL RECORD.

The total excavation for July was 2,633,437 cubic yards, as compared with 2,518,982 cubic yards in July, 1911.

The dry excavation amounted to 1,584,540 cubic yards, and was principally by steam-shovels. The dredges removed 872.079 cubic yards from the Canal prism, and 89,618 cubic yards from the site of the Balboa terminal, in addition to the amount pumped into Gatun Dam by suction dredges, while 85,000 cubic yards were taken out south of Miraflores Locks by monitors. The progress on the locks at Gatun, Pedro Miguel, and Miraflores is referred to elsewhere in this issue.

In the Atlantic Division, the total excavation was 584,173 cubic yards. Of this total, 19,605 cubic yards consisted of dry excavation near the Locks, and the remainder was wet excavation—495,398 cubic yards from the Atlantic entrance, and 69,170 cubic yards between the open water channel and the Locks.

The total excavation in the Central Division was 1,336,366 cubic yards, 1,329,510 cubic yards from the Culebra Cut section, 776 cubic yards from the Chagres section, and 6,080 cubic yards from the Obispo Diversion.

In the Pacific Division, the total excavation was 712,898 cubic yards, 307,511 cubic yards of which were "work" excavation taken out in the Pacific entrance, 2,200 cubic yards consisted of plant excavation removed from the entrance, 89,618 cubic yards represented material dredged from the inner harbor at Balboa, and 85,000 cubic yards monitor excavation south of Miraflores Locks. The total dry excavation aggregated 228,569 cubic yards, 152,555 from the prism south of Miraflores Locks, 67,070 from the terminal site, and 8,944 cubic yards at the locks, dams, and spillways.

A detailed statement of the excavation, and a summary of the work on the locks and dams, follow:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation.
Dry excavation—	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*
Locks, dam and spillway	19,605	....	19,605
Mindi	......	....	....
Total	19,605	....	19,605
Wet excavation—			
Atlantic entrance	495,398	....	495,398
Locks, dam and spillway	69,170	....	69,170
East Diversion	....	....	....
Total	564,568	....	564,568
Total wet and dry excavation	584,173	....	584,173
CENTRAL DIVISION.			
Dry excavation—			
Culebra Cut	1,329,510	....	1,329,510
Chagres section	776	....	776
Obispo Diversion	6,080	....	6,080
Total	1,336,366	....	1,336,366
PACIFIC DIVISION.			
Dry excavation—			
Locks, dams and spillways	8,944	....	8,944
Balboa terminals	67,070	....	67,070
Prism, south of Miraflores Locks	152,555	.....	152,555
Total	228,569	....	228,569
Wet excavation—			
Pacific entrance	307,511	2,200	309,711
Balboa terminals	89,618	....	89,618
Prism	85,000		85,000
Total	482,129	2,200	484,329
Total wet and dry excavation	710,698	2,200	712,898
TOTAL CANAL EXCAVATION.			
Dry excavation	1,584,540	....	1,584,540
Wet excavation	1,046,697	2,200	1,048,897
Total	2,631,237	2,200	2,633,437

Mean rainfall along Canal (ten stations), 10.92 inches.

By "Work" excavation is meant excavation actually made for one of the constituent parts of the Canal, such as a prism, diversions, or locks, etc., that is, it represents material taken from the area to be occupied by the Canal and constitutes excavation useful for the completed Canal.

By "Plant" excavation is meant excavation outside of any of the constituent parts of the Canal, such as prism, diversions, or locks, etc., It includes material necessary to be excavated for construction purposes only, and is chargeable against the particular plant item for which it is performed such as prism, diversions, locks, etc.

DAM AND LOCK CONSTRUCTION.

MATERIAL.	Atlantic.	Pacific.	Total.
	Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*
Concrete laid in locks.	8,093	77,506	85,599
Concrete laid in dams and spillways	1,357	529	1,886
Fill placed in dams	315,868	53,970	369,838

Timber for Lock Gate Sills.

Greenheart timber from Demerara, a county in British Guiana, will be used for the miter sills of the lock gates. This timber, which combines to unusual extent the qualities of strength, durability and resistance to the attacks of the teredo and other marine borers, was adopted after comparison with white oak from the United States, iron bark wood from Australia, and other hard woods. A total of about 140,000 feet, board measure, will be used for all of the gates.

Lock Machinery Model at Culebra.

The lock machinery model, which was exhibited by the Isthmian Canal Commission at the International Navigation Congress, held in Philadelphia from May 23 to 28, 1912, has been returned to the Isthmus and placed in a screened enclosure under the Administration building at Culebra. A description of the model was published in THE CANAL RECORD for March 13, 1912. Electrical and hydraulic connections for the operation of the machinery have been made at Culebra and the apparatus will be exhibited to visitors. The model, which was constructed at Gorgona shops, attracted much interest at the navigation congress and afforded an easy explanation of the machinery especially designed for the operation of the locks.

Further Relocation of East Diversion Channel.

Further relocation of the east diversion of the Obispo River from the Canal has been necessitated by three slides opposite Empire, near the point at which the Las Cascadas plantation road crosses the Diversion in its approach to the suspension bridge. The new diversion channel will describe an arc subtended by the present straight channel and approximately bisected by the Las Cascadas plantation road, crossing under the road through a concrete culvert to be constructed for the passage of the Masambi River, one of the two principal tributaries to the Obispo on the east side of the Canal. It will be about 2,000 feet long and about 360 feet east of the present channel, or

NOTES OF PROGRESS.

(Continued.)

800 feet east of the axis of the Canal, at the crown of the arc. Trestle work, similar to that used in relocating the east diversion opposite the Whitehouse yards, will be required at both ends of the new section to prevent obstructing the present channel until the relocation is completed. A piledriver is engaged in the construction of the south trestle. At the northern end, the trestle is completed, and steamshovel No. 124 has begun excavation on the 30-foot channel, the largest cut in which will be about 26 feet deep. Approximately 35,000 cubic yards of earth excavation and 26,000 cubic yards of filling will be required.

Congestion of Quarters Around Pacific Works.

All available gold quarters at Ancon, East Balboa, and Corozal are occupied at the present time, and there is a large waiting list. Additional employes sent down by the McClintic-Marshall Construction Company for work on the gates at Pedro Miguel and Miraflores locks, gold employes added to the work on the Balboa terminal, and the removal of the quarters at old Balboa have, in part, been responsible for the congestion. The work of removing the buildings at old Balboa is practically completed, with the exception of building No. 27, which houses 72 bachelor employes, and cannot be dismantled until the conversion of the upper part of the East Balboa hotel, and of the police station, formerly at old Balboa, now at East Balboa, into bachelor quarters, has been effected. The removal of the type-18 house from Empire to Corozal helped to relieve the congestion at the latter place. It was dismantled, shipped and reerected in 32 days.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 90 per cent completed, 204,192 cubic yards, out of a total of 225,000, having been placed at the close of work on August 10. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked.	No. Mixers.
August 5	44	2.30	1
August 6	9	1.30	1
August 7	52	4.00	1
August 8	80	6.00	1
August 9	44	3.30	1
August 10	68	5.30	1
Total	297	23.00	1
Previously reported	203,895		
Grand total	204,192		

Civil Service Examinations.

A supply of the Manual of Examinations for the fall of 1912 has been received.

Examinations for the following named positions are scheduled to be held at Culebra, probably on September 15: Apprentice plate cleaner, transferrer, and engraver, Bureau of Engraving and Printing; assistant inspector of boilers, assistant inspector of hulls, Steamboat Inspection Service; clerk, Isthmian Canal Service; copyist topographic draftsman, topographic draftsman, nonapportioned Departmental Service; junior engineer draftsman, engineer department at large; electrician, nonapportioned Departmental Service; kindergarten teacher, Indian Service; local inspector of boilers, local inspector of hulls, Steamboat Inspection Service; matron, Indian Service; physician, all services, except Philippine; teacher, Indian Service; veterinarian, nonapportioned Departmental Service. Women will be admitted only to the examinations for copyist topographic draftsman, topographic draftsman, kindergarten teacher, matron, and teacher mentioned above.

Applications for the abovenamed examinations will not be received in this office after August 20. This date will be changed if necessary. In requesting information, the kind of examination desired should be specifically mentioned.

All instructions found in application forms and in the Manual of Examinations concerning an examination desired should be carefully read and understood before filing application. In answering question 4 in applications, residence must be shown in a State, and county thereof, of the United States, up to the time of making application. The date of examination should be omitted in application forms.

ISTHMIAN CIVIL SERVICE BOARD.

Culebra, C. Z., August 10, 1912.

CONCRETE WORK IN THE LOCKS.

Over 90 per cent of the concrete for the locks is in place, the amount at the close of work on August 10 being 3,905,159 cubic yards, out of a total of approximately 4,302,563. A total of 19,763 cubic yards of concrete was laid in the locks during the week ending August 10.

GATUN LOCKS.

About 95 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on August 10 being 1,890,959 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day of the week ending August 10, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
August 5	278	4.49	3					278
August 6	266	4.28	3					266
August 7	244	4.04	2					244
August 8	278	4.28	3					278
August 9	136	2.21	3					136
August 10	38	.38	1					38
*Portable mixer				*10				10
Total	1,240	20.40	2.50	10				1,250
Previously reported								1,889,709
Grand total								1,890,959

*The 10 yards shown for the portable mixer are reinforced concrete and were placed on August 7.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 98 per cent completed, 872,961 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on August 10. The record for each of the working days of last week, follows:

DATE.	AUXILIARY PLANT.						Large stone.	Total.
	2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
August 5	174	4.50	1	167	28.50	4		341
August 6	58	1.50	1	206	22.00	4		264
August 7	174	9.00	1	249	25.50	4		423
August 8	128	7.00	1	169	26.50	3		297
August 9	116	6.00	1	195	23.50	4		311
August 10				220	33.00	5		220
Total	650	28.00	.83	1,206	159.00	4		1,856
Previously reported							4,493	871,105
Grand total							4,493	872,961

MIRAFLORES LOCKS.

Over 80 per cent of the concrete for the system of two twin locks at Miraflores was in place August 10, the total amount on that date being 1,141,239 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each working day last week, follows:

DATE.	CONSTRUCTION PLANT. 2-cubic yard mixers.			AUXILIARY PLANT.							Total.
				2-cubic yard mixers.			½-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			Cu. Yds.			Cu. Yds.			Cu. Yds.	Cu. Yds.
August 5	1,494	49.92	7	1,580	19 58	2	651	61.00	7		3,725
August 6	906	31.92	7	1,328	18.75	2	503	49.00	7		2,737
August 7	736	31.75	7	1,424	18.75	2	453	40.50	7		2,613
August 8	1,020	28.25	7	1,258	18.00	2	439	39.50	6		2,717
August 9	776	20.42	7	1,532	20 00	2	394	34.50	5		2,702
August 10	1,054	27.20	7	716	11.92	2	393	34.50	5		2,163
Total	5,986	189.46	7	7,838	107.00	2	2,833	259.00	6.17		16,657
Previously reported										3,693	1,124,582
Grand total										3,693	1,141,239

SOCIAL LIFE OF THE ZONE.

Church Work.

The seventh annual missionary campaign of the Wesleyan Methodist church in Panama and the Canal Zone was begun on Monday evening, August 12, at Colon, with the Rev. E. A. Pitt of Costa Rica, as special deputy preacher. During the week, services will be held in all the mission churches of the mission, and during the campaign, a service will be conducted each evening at one of the missions.

Ground was broken on Monday, August 12, in the lot between 15th and 16th streets, in the city of Panama, for the erection of a new building in connection with the Wesleyan church to be used for parish house and school. The structure will be built of rubble masonry, similar in style to the church directly back of which the building will stand. The kitchen, servants' room, lavatories, and offices will occupy the basement; in the second story will be the schoolroom, a hall 77 by 38 feet; and the pastor's residence will be in the upper story. The cost of the building will be about $10,000, United States currency. Of this sum, $2,500 has been raised by the local mission, and the remaining $7,500 will be paid by the church in England as a loan, with the understanding that the sum is to be reduced year by year until the amount is paid. It is expected that the building will be ready for occupancy in November, or December. It is the purpose to open a parochial day school if a sufficient number of pupils is registered to warrant the expense.

On Sunday morning, August 18, the Rev. Father William Rojas, apostolic administrator to the bishopric of Panama, will be consecrated bishop by the Right Reverend, the Bishop of Costa Rica. The ceremony will take place in the cathedral at 9 o'clock. Father Rojas was appointed temporary administrator in Panama by the Vatican on the death of Monseigneur Javier Junguito, the Bishop of Panama, in November, 1911. Later, this appointment was ratified, and after his consecration, Father Rojas will continue to be episcopal administrator to the see of Panama. Prior to his call to Panama, the new bishop was the parish priest at St. Catejan's Church, Gorgona.

Miscellaneous Notes.

On Saturday evening, August 31, Orchid Chapter, No. 1, Order of the Eastern Star, will hold a dance in the Commission clubhouse at Gorgona. Master masons and members of masonic clubs, and the wives, daughters, and relatives of such members, as well as all members of the Eastern Star are cordially invited to attend. This is the first entertainment to be held by the order.

The Woman's Altar Society of Christ Church, Colon, will hold an entertainment at the Commission clubhouse on Saturday afternoon, August 17. The program will consist of an informal talk on Central America by Mrs. W. H. Bell, and music. Refreshments will be served. Tickets are on sale at 50 cents each. The proceeds of the entertainment will be devoted to the society's fund for the purchase of a marble altar for Christ Church.

Rifle Match.

The Canal Zone Rifle Club held a shoot at Pedro Miguel on August 4 for the annual medal offered by the National Rifle Association. The match is shot by all affiliated organizations of the National Rifle Association, and is at the 200, 300, and 500-yard ranges. The winner this year was W. W. John of Ancon. The scores of the ten men shooting were, as follows:

W. W. John	131
F. W. Walraven	128
J. N. Haynes	127
G. C. Ferris	126
W. L. Greene	125
W. M. Taylor	115
A. E. Darling	103
Max Boggs	101
Samuel Hutton	98
C. H. Cammack	96

A miss by Mr. Walraven at the 500-yard range lost him the medal, as he finished his score by making 43 out of 45.

Unveiling of Bust of Lieutenant Wyse.

The unveiling of a bronze bust of Lieut. Lucien Napoleon Bonaparte Wyse, the first Panama Canal concessionaire, who died in France, in June, 1909, took place on Sunday afternoon, August 11, at 4 o'clock, on that part of the seawall in Panama, known as Las Bovedas. The ceremony was attended by the members of the municipal council of the city of Panama, Panama government officials, and some of the diplomatic corps, including Mons. H. A. M. Barre-Ponsignon, the French charge d'affaires. The speech of acceptance on the part of the city was given by Mr. Enoch Adames V, president of the municipal council, and the response was made by Mr. Federico Boyd, who represented the son of the promoter in turning over the gift to the city, as he could not be present in person.

The bust rests on a square pedestal of white marble, six feet high, mounted on a concrete base in the form of three steps, situated at the outermost point of the seawall. It faces due west, and in this position, overlooks the Pacific entrance to the Canal. On one side of the marble pedestal there is the following inscription: "1911. El Municipio de Panama. Al ilustre ingeniero Francés. L. N. Bonaparte Wyse;" on the other, the following: "Lucien Bonaparte Wyse. Teniente de Navios. Promotor de la apertura del Canal Interocéanico. 1844-1909." A brief description of the activities of Lieutenant Wyse in connection with the early Panama Canal project was published in THE CANAL RECORD of June 23, 1909.

Ancon Crusher.

The following is a statement of rock crushed at Ancon quarry during the week ending August 10:

DATE.	Hours worked.	Cubic Yards.
August 5	7.35	2,833
August 6	6.35	2,655
August 7	7.00	2,424
August 8	8.25	2,971
August 9	8.30	3,679
August 10	7.50	2,523
Total	45.55	17,085

LABOR FORCE AND QUARTERS IN JULY.

On July 31, there were 35,169 employes actually at work on the Canal and the Panama railroad, and of that number, 28,382 were Canal employes. The gold force on the Canal work, composed almost entirely of white Americans, was 4,196. The force report for July 31, 1912, was, as follows:

DEPARTMENT.	SILVER EMPLOYES.*													Total silver.	Total gold.	Grand total.
	Artisans.						European laborers.		West Indian laborers.							
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Const'ct'n and Eng'r'ng.	4,122	11	13	242	745	2,961	3,613	530	108	456	4,482	2,456	†251	19,990	3,181	23,171
Civil Administration	157			2	4	20						6		189	305	494
Sanitation	678			3	2	5			1	2	6	326	1	1,024	364	1,388
Quartermaster's	869			120	200	175	58	8	38		166	681	‡18	2,333	185	2,518
Subsistence	632			2		5								639	51	690
Disbursements	7													7	24	31
Examinat'n of Accounts	4													4	86	90
Total	6,469	11	13	369	951	3,166	3,671	538	147	458	4 654	3,469	270	24,186	4,196	28,382
Month previous	6,747	10	12	343	861	3,108	3,811	560	145	431	4,315	3,837	264	24,444	4,125	28,569

Panama railroad force, 5,474, Panama railroad commissary force, 1,313. Total, 6,787. I. C. C. force, 28,382. Grand total, 35,169.

*All wages specified are in gold. †Includes 9 at 5 cents. ‡Includes 12 at 5 cents.

The force report for the Department of Construction and Engineering on July 31, follows.

DIVISION.	SILVER EMPLOYES.*													Total silver.	Total gold.	Grand total.
	Artisans.						European laborers.		West Indian laborers.							
	Monthly.	44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	20 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Chief Engineer	201			33	113	402	98	18		12	556	161	11	1,605	407	2,012
Mechanical	265	6	3	36	76	483	73	2			804	60	8	1,816	823	2,639
Atlantic	1,439	5	9	78	216	618	1,018	176		51	595	222	29	4,455	628	5,084
Central	957			25	101	413	1,423	35	88	393	661	1,691	137	5,924	583	6,507
Pacific	1,260		1	70	239	1,045	1,001	299	20		1,866	322	†66	6,189	740	6,929
Total	4,122	11	13	242	745	2,961	3,613	530	108	456	4,482	2,456	251	19,990	3,181	23,171
Month previous	4,318	10	12	235	730	2,841	3,751	538	114	430	4,120	2,764	253	20,116	3,046	23,162

*All wages specified are in gold. †Includes 3 at 5 cents.

QUARTERS.

On July 31, there were 23,069 occupants of Commission quarters. Of these, 8,821 were white Americans, of whom 5,048 were men, 1,896 were women, and 1,877 were children. There were 5,314 Europeans of the laborer class, of whom 4,759 were men; 211 were women, and 344 were children. There were 8,934 West Indian negroes, of whom 6,691 were men; 945 were women, and 1,289 were children.

RECORD OF CANAL WORK SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS OF EXCAVATION AND LOCK AND DAM CONSTRUCTION.

[All figures are of work useful for the completed Canal.]

DRY EXCAVATION.

CENTRAL DIVISION.

M'THS.	CULEBRA SECTION.*								CHAGRES SECTION.**				
	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.
Jan	70,650	120,990	566,750	1,227,022	1,150,249	1,323,693	1,356,394	1,416,035	169,447	389,399	175,802	255,385	28,357
Feb	75,200	168,410	639,112	1,248,265	1,194,454	1,259,173	1,409,338	1,349,569	200,145	450,182	286,309	219,550	66,145
March	132,840	239,178	815,270	1,290,885	1,434,597	1,509,728	1,728,748	1,539,618	324,233	619,491	484,846	297,339	172,607
April	126,749	213,177	879,527	1,242,574	1,272,746	1,288,845	1,414,336	1,455,216	329,483	510,020	428,777	102,103	171,731
May	75,935	196,209	690,365	960,840	1,126,963	1,099,279	1,299,100	1,405,760	235,902	386,170	248,974	29,783	12,524
June	76,905	212,623	624,586	1,134,032	1,242,134	1,305,141	1,401,016	1,348,780	322,145	275,900	164,389	32,288	8,424
July	78,570	159,789	770,570	1,121,325	1,200,828	1,153,810	1,337,833	1,335,5[illegible]0	345,757	233,897	166,106	22,284	776
August	49,210	244,823	786,866	1,171,927	1,173,370	1,277,714	1,442,402	....	368,683	231,543	234,404	21,892	....
Sept	44,085	291,452	753,468	1,122,860	1,235,978	1,339,948	1,340,173	....	346,948	235,818	234,290	21,272	....
Oct	52,940	327,009	834,499	1,160,101	1,302,901	1,320,314	1,306,971	....	424,911	221,409	271,409	12,216	....
Nov	60,540	221,642	790,632	1,022,576	1,070,792	1,209,554	1,209,498	....	336,390	93,619	260,882	12,248	....
Dec	70,630	307,689	1,025,485	1,210,046	1,152,022	1,211,400	1,351,082	....	383,948	105,044	197,481	10,809	....
Totals	914,254	2,702,991	9,177,130	13,912,453	14,557,034	15,398,599	16,596,891	9,850,568	3,787,992	3,752,492	3,153,669	1,037,169	460,564

Mos.	ATLANTIC DIVISION.† GATUN LOCKS, DAM AND SPILLWAY.††					PACIFIC DIVISION.¶ PEDRO MIGUEL LOCKS.‡					MIRAFLORES LOCKS, DAMS AND SPILLWAY.‡‡					BALBOA T'M'L'S.§
	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.	1908.	1909.	1910.	1911.	1912.	1912.
Jan	292,155	102,690	125,011	65,889	1,330	....	83,726	27,320	15,690	24,969	7,203	61,202	31,479	48,744	95,609	....
Feb	282,797	95,031	123,738	50,511	1,2[illegible]8	....	58,242	9,486	6,809	18,480	39,046	53,689	15,300	12,936	47,426	....
Mar	374,598	90,051	132,007	51,431	254	....	95,624	6,784	674	1,777	73,194	51,417	18,184	72,739	28,352	....
Apl	373,456	70,009	103,243	12,548	27,134	....	101,365	9,129	255	13,269	98,943	60,060	12,148	79,751	29,094	....
May	266,747	52,7[illegible]	82,958	17,677	24,280	....	57,523	10,405	5,905	26,0[illegible]8	73,023	47,588	20,250	57,975	13,096	....
June	244,951	36,556	[illegible]8,[illegible]8	4,840	19,605	13,228	70,971	8,420	7,454	7,794	68,691	55,653	21,994	38,023	7,906	23,140
July	213,359	39,058	95,503	6,897	....	22,648	77,503	4,410	6,273	4,412	104,369	50,999	11,990	97,884	4,532	67,070
Aug	188,262	40,346	99,737	22,55[illegible]	....	22,217	58,025	12,789	220	....	94,248	35,446	17,548	102,249	....	....
Sept.	145,990	49,945	103,040	3,489	....	28,833	48,825	10,405	3,472	....	90,923	31,803	8,590	96,112	....	....
Oct.	154,064	57,321	118,327	112	....	48,875	39,002	7,433	5,365	....	74,700	25,349	9,850	107,790	....	....
Nov.	118,278	63,452	94,552	....	....	55,401	20,207	10,636	12,962	....	52,930	18,644	9,400	84,894	....	....
Dec.	119,904	96,590	72,030	....	....	65,578	28,342	11,195	17,320	....	69,650	20,083	17,906	79,480	....	....
Tot'ls	2,774,561	793,835	1,278,234	235,952	73,831	256,780	739,355	129,412	82,399	96,719	846,920	511,933	194,639	878,577	226,015	90,210

*Total to August 1, 1912, 83,353,392 cubic yards. Excavated in 1904, May to December, 243,472 cubic yards.

**Total to August 1, 1912, 12,384,655 cu. yds., of which 192,769 cu. yds. were removed in 1907, 188,239 cu. yds. were removed by slucing

†Dry excavation at Mindi Hills began in July, 1907. There were excavated 172,851 cubic yards, 1907; 590,955 cubic yards 1908; 713,015 cubic yards, 1909; 662,995 cubic yards, 1911; 56,382 cubic yards, 1912; total to August 1, 2,196,198 cubic yards.

¶There were also 78,233 cubic yards excavated at Balboa locks and dams in 1907. There were removed 1,454,801 cubic yards at different points in prism to August 1, 1912. There were also 172 cubic yards removed by steamshovels outside of prism during October, 1908.

††Total to August 1, 1912, 6,483,220 cubic yards; in this total are included 26,628 cubic yards excavated October to December, 1906, and 1,340,179 cubic yards in 1907.

‡Total to August 1, 1912, 1,303,665 cubic yards. ‡‡Total to August 1, 1912, 2,658,084 cubic yards. §Total to August 1, 1912, 90,210 cubic yards.

WET EXCAVATION.

Mos.	ATLANTIC DIVISION.† ATLANTIC ENTRANCE.§§						PACIFIC DIVISION.†† PACIFIC ENTRANCE.§§§								BALBOA TERM'NLS*	
	1907.	1908.	1909.	1910.	1911.	1912.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1911.	1912.
Jan	111,100	490,701	521,050	510,055	520,181	520,228	....	95,940	94,710	460,250	469,529	518,936	379,810	334,735	....	77,383
Feb	110,002	427,722	444,910	493,448	455,318	581,399	....	95,940	93,480	663,519	671,477	285,791	386,866	432,79[illegible]	....	....
Mar	94,145	546,886	461,208	412,325	391,736	103,373	....	116,820	92,319	783,281	865,696	462,588	639,761	404,939	....	....
Apl.	69,889	496,366	470,635	190,574	492,579	134,261	....	110,700	104,855	676,539	731,767	534,322	439,622	383,99[illegible]	....	....
May.	133,847	564,386	315,370	447,578	514,178	229,626	....	112,340	122,157	530,466	720,753	484,509	548,047	388,310	....	
June.	124,118	572,749	182,575	458,021	452,098	343,804	50,676	62,697	133,575	656,621	844,685	475,486	576,100	338,006	....	28,668
July.	109,922	625,497	348,451	423,092	425,195	495,398	41,533	98,400	108,338	696,170	733,181	515,782	520,692	392,511	....	89,618
Aug.	194,297	638,217	422,846	508,829	367,456	....	54,530	111,930	168,284	737,774	623,263	506,969	630,241	....	....	....
Sept.	403,842	624,776	410,574	451,873	420,434	....	114,308	105,780	153,975	750,080	662,976	473,585	534,667	....	....	....
Oct.	415,120	505,260	314,778	549,788	470,400	....	81,836	97,170	357,122	762,276	720,920	467,873	329,224	....	10,591	....
Nov.	422,797	570,832	457,889	600,708	742,242	....	71,176	92,988	365,423	609,089	627,791	425,370	346,089	....	116,194	....
Dec.	442,835	679,604	489,121	482,370	533,409	....	71,094	90,528	349,551	729,960	727,460	387,034	141,189	....	137,771	....
Tot'ls	2,621,914	6,742,996	4,839,407	5,528,661	5,785,226	2,408,089	485,153	1,191,233	2,143,789	8,056,025	8,399,498	5,538,745	5,472,30[illegible]	2,675,292	264,556	195,669

†Dredges removed 38,425 cubic yards at Gatun Dam site in 1907, and 1,441,621 cubic yards at Gatun Locks in 1908, 1909, and 1912, of which 69,170 were removed in July, 1912.

††Excavated at Miraflores Locks 309,647 cubic yards in 1909; 156,125 cubic yards in 1910; 176,578 cubic yards in 1911; total 642,350 cu. yds.

§§Total to August 1, 1912 29,353,758 cu. yds.; in this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906.

§§§Total to August 1, 1912, 33,962,013 cubic yards. Of this amount, 1,183,273 yards were removed by monitors. *Total to Aug. 1, 1912, 460,225.

CONCRETE IN LOCKS AND DAMS.

MONTHS.	GATUN LOCKS.†			PEDRO MIGUEL LOCKS.††			MIRAFLORES LOCKS.‡		
	1910.	1911.	1912.	1910.	1911.	1912.	1910.	1911.	1912.
Jan	54,136	72,919	34,983	16,273	38,513	15,003	....	24,018	48,416
Feb.	55,696	72,103	26,664	13,218	37,011	12,639	146	20,896	63,893
March	60,998	86,884	27,532	18,793	44,716	9,331	314	31,173	83,706
April	63,227	67,361	11,600	24,522	28,635	9,460	13	38,758	97,735
May	74,273	67,844	7,746	29,576	19,135	10,736	27	36,154	92,095
June	89,401	55,305	6,095	30,631	18,243	10,061	1,603	26,536	68,398
July	84,001	71,046	8,093	41,464	19,906	11,480	3,672	32,840	66,026
Aug.	85,686	66,928	....	51,264	20,736	....	6,030	57,003	....
Sept.	76,720	57,298	....	50,702	15,379	....	13,133	56,083	....
Oct.	86,949	53,636	....	61,422	25,637	....	22,159	60,873	....
Nov.	75,152	43,907	....	64,248	19,622	....	23,871	41,726	....
Dec.	80,212	43,590	....	42,834	14,360	....	21,533	48,772	....
Total	886,451	758,821	122,713	444,947	301,893	78,710	97,501	474,832	520,269

Spillway, Gatun Dam, March 17, 1909—August 1, 1912, 204,370 cu. yds.
Miraflores Dam, to August 1, 1912, 471 cubic yards.
Pedro Miguel Dam, 553 cubic yards to August 1, 1912.
†116,072 cu. yds in 1909. ††33,856 cu. yds in 1909. ‡102 cu. yds in 1909.

FILL PLACED IN DAMS.

M'THS.	GATUN.*				PEDRO MIGUEL.†		MIRAFLORES.‡			
	1911.		1912.		1911.	1912.	1911.		1912.	
	Wet.	Dry.	Wet.	Dry.	Dry.	Dry.	Wet.	Dry.	Wet.	Dry.
Jan	211,992	218,690	173,900	239,266	......	38,044	89,243	24,685	....	24,920
Feb.	301,733	211,008	211,399	145,221	......	35,153	87,335	32,404	....	26,475
Mar.	342,800	255,047	242,874	229,059	......	86,252	25,131	23,940	....	24,570
April	368,658	205,130	204,189	286,956	......	67,385	14,100	67,260	....	26,292
May	419,348	207,751	194,733	227,017	......	21,782	18,353	30,032	....	31,220
June	432,008	227,996	160,688	193,110	......	15,304	53,858	28,315	....	37,770
July	324,947	201,996	108,163	207,405	14,865	16,150	24,957	54,415	....	37,820
Aug.	259,389	232,426	....	....	24,812	......	25,000	72,203	....	....
Sept.	261,838	194,497	....	....	4,[illegible]52	......	6,409	34,480	....	....
Oct.	214,320	218,305	....	....	3,400	......	7,130	37,250	....	....
Nov.	266,603	207,157	....	....	3,190	......	14,370	31,800	....	....
Dec.	89,752	233,063	....	....	7,350	......	....	23,730	....	....
T'tal	3,493,388	2,613,066	1,296,246	1,528,034	57,669	280,070	366,336	460,514	....	209,067

*Wet fill to Jan. 1, 1911, 5,833,076 c. y.; Dry fill to Jan. 1, 1911, 6,128,105 c. y.
†Dry fill to Jan. 1, 1911, 260,852 c. y.
‡Wet fill to Jan. 1, 1911, 294,712 c. y. Dry fill to Jan. 1, 1911, 609,863 c. y.

CANAL EXCAVATION TO DATE.

By French Companies		78,146,960
French excavation useful to present Canal		29,908,000
By Americans—		
Dry excavation	109,814,391	
Dredges	66,086,661	
Total		175,901,052
May 4 to December 31, 1904	243,472	
January 1 to December 31, 1905	1,799,227	
January 1 to December 31, 1906	4,948,497	
January 1 to December 31, 1907	15,765,290	
January 1 to December 31, 1908	37,116,735	
January 1 to December 31, 1909	35,096,166	
January 1 to December 31, 1910	31,437,677	
January 1 to December 31, 1911	31,603,899	
January 1 to July 31, 1912	17,890,089	

TOTALS BY DIVISIONS AND AMOUNT TO BE EXCAVATED.

DIVISIONS.	Amount excavated.		Remaining to be Excavated.	
Atlantic—				
Dry excavation	8,679,418	39,513,222	*19,418	8,009,778
Dredges	30,833,804		8,029,196	
Central—				
Culebra Cut	83,353,392	95,738,047	10,528,608	10,678,953
All other points	12,384,655		150,345	
Pacific—				
Dry excavation	5,585,165	40,649,783	5,355,835	17,637,217
Dredges	35,064,618		12,281,382	
Grand totals		175,901,052		36,325,948

*Estimate exceeded by this amount.

WORK AT BALBOA TERMINAL.

Increased Activity in Preparing Site for Permanent Plants.

The scope of the preliminary work at the site of the Balboa terminal has been considerably enlarged during the past two weeks, and about 1,100 men are now employed at that point. Two steamshovels are continuing the excavation in the side of Sosa Hill, and have made a cut clear through to the tide water flat near the Panama railroad wharf, across which a fill is being made to the higher ground on which the wharf buildings stand. The excavation is mostly earth mixed with loose boulders, but at two points solid rock masses are encountered. The line of excavation as originally planned has been extended farther back into the hill on account of a change in the plans lengthening the drydock.

The greater part of the spoil from Sosa Hill is dumped between the toes of the old Sosa dam to form the site of the new railroad yard. It was found that the east toe of this dam was considerably higher than the established grade and a pick and shovel gang is engaged in lowering the embankment. The work of razing the remainder of the shacks that formerly constituted the native settlement at old Balboa is in progress, and the removal of the dredge parts and various odd pieces of machinery, some obsolete, others serviceable, that at present encumber the site of the drydock, will be begun shortly. The dredge parts and other material that can be used at Balboa will be moved to a convenient point near the shipways, and the remainder will be shipped to where it can be used to the best advantage. Tracks are being laid for a fill about west of the bend in the road leading into Balboa on which a new field office will be erected. Temporary office quarters have been established in a two-story house formerly occupied by the "La Boca Hotel."

Progress in Gate Erection.

Excepting the leaves for the lower guard gate in the west chamber of Pedro Miguel Lock, all of the leaves for the six sets of gates, 24 leaves in all, for the two chambers of the lock, have been brought to full height. The two erection bridges of the first set have been dismantled and are being transferred to Miraflores Locks, where none of the material for the gates, with the exception of parts of the hinges, set in the concrete walls, is in place. The lower guard gates at Pedro Miguel are only 47 feet four inches high, and their erection is being carried on with the use of a locomotive crane, working on the lock floor. Erection of the gates for Pedro Miguel Lock began on August 7, 1911, at the site of the upper guard gates. The upper guard gates are practically completed, only a slight amount of riveting and calking remaining to be done.

At Gatun Locks, also, six sets of gates, with 24 leaves, have been brought to full height. Note of the completion of the upper guard gates was made in the CANAL RECORD of August 7, 1912. Five of the gates for each chamber of the upper level, and one in each chamber of the lower level, comprise those of which the skeletons are completed. During this month, work will be begun in the middle lock, and on the lower guard gates. It is expected that all of the leaves in Gatun Locks will have been erected to full height by January 1, 1913, though a considerable amount of riveting, calking, and adjustment will remain to be done after that date.

The force of the McClintic-Marshall Construction Company, numbering about 1,500 men, approximately one-seventh of whom are white, or "gold" employes, was augmented on August 8 by 18 white men, seven machinists and eleven bridgemen, who arrived from New Orleans on the steamship *Atenas*. They were assigned to work in the Pacific locks.

August Borrow Pit Excavation, Gatun Dam.

The shovels working in borrow pits for the Gatun Dam excavated a total of 277,156 cubic yards, place measurement, during the month of July, or an average of 2,099 cubic yards per shovel per day.

The following table classifies the material excavated, and indicates the yardage by place measurement for each shovel:

Shovel No.	Cubic Yards.			Working Days.	Location.
	Earth.	Rock.	Total.		
116	9,893	42,100	51,993	25	West borrow pit.
117	28,570	....	28,570	22	Hydroelectric plant and red clay pit.
120	....	*65,510	65,510	26	West borrow pit.
125	....	8,021	8,021	5	West borrow pit.
134	32,244	....	32,244	21	Red clay borrow pit.
257	31,595	45,327	76,922	26	West borrow pit.
263	....	13,896	13,896	7	West borrow pit.
	102,302	174,854	277,156	132	

*This exceeds by 532 cubic yards the monthly Isthmian record for a 70-ton shovel, made by the same shovel in April, 1912.

Street Railway Progress.

Tracklaying on the line of the Panama Tramways Company, on the paved streets in the city of Panama, was begun on July 25, on North avenue, near the American wharf, and on Saturday, August 10, the crew had reached Central avenue at the intersection of Thirteenth street. From this point operations will be extended past Santa Ana park, and down C street to Sixteenth, thence on Sixteenth street to the Balboa road, and out the latter thoroughfare toward East Balboa. On all streets in the city of Panama where there is a concrete foundation to the pavements, steel ties are being used; where the foundation is crushed rock and sand only, creosoted cypress ties are substituted. On brick paved streets the "Trilby" rail is used; on others, the ordinary "T" rail. The rails laid by the former company on C street, and on the Balboa road, do not meet the requirements in the present construction, and will be removed and stored. The side hill excavation near East Balboa is practically completed, and the material removed has been utilized in making a broad fill on each side of the hill, paralleling the dirt road.

The Balboa terminal of the tramway has not been definitely fixed, but the company has been furnished with a sketch of the proposed townsite, and has been accorded the privilege of constructing its lines along the main street of the new city, which will extend nearly on a line from the East Balboa commissary across the fill toward the East Balboa hotel. To date, approximately two and one-half miles of track have been laid by the company, including a line on North avenue paralleling the Panama railroad yards to Calidonia street, thence out Calidonia to a point on the Sabanas road near the old quarry. The section of the line extending to the Hotel Tivoli has been built to the Canal Zone boundary, and the spur to the hospital reservation is laid. The pole construction will begin shortly, having been held up on account of delay in shipment of material. The company has over 500 men in its employ, and, at the present rate of progress, the work will probably be completed ahead of the schedule.

It has been practically determined that the company will be supplied with power from the Miraflores plant of the Canal Commission, and a committee, consisting of Edward Schildhauer, H. K. Smith, and Hartley Rowe, has been appointed to consider the requirements for furnishing this service. That part of the work appertaining to the replacing of pavements and the proper care of street and roads is under the supervision of the superintendent of public works, in the city of Panama, and a representative of the Pacific Division, in the Canal Zone.

International Brotherhood of Steamshovel and Dredge Men.

Local No. 19, I. B. of S. S. & D. M., will hold its regular meeting on Sunday, August 18, at Empire lodge hall, at 12.15 p. m. All members are requested to attend.

A. EDMONSON,
Secretary-Treasurer.

Empire, C. Z., August 9, 1912.

Obituary.

James Ransom Strock, an employe of the Mechanical Division at Gorgona, died at Ancon hospital on August 8. He was 50 years old, married, and had been on the Isthmus five years. He is survived by a son, W. T. Strock, living at Gorgona. Funeral services were held at St. Luke's Hospital chapel on Sunday, August 11.

Joseph Henry Painter, an employe of the Atlantic Division at Gatun, died at his home in Gatun on August 7. He was 36 years of age, married, and had been on the Isthmus a little over four years, coming here from Cleburne, Texas. He is survived by his wife, living in Gatun.

Fredericka Duvall, the two-year old daughter of Mr. Fred A. Duvall, died on August 4 at Gorgona. She was born in Ancon Hospital on July 18, 1910.

Work of Central Division Unloaders for July.

The following statement shows the number of trains and lidgerwood cars unloaded by the Central Division during the month of July:

Location.	No. of unloaders.	No. of trains.	No. of cars.
Balboa..............	4	1,351	27,020
Miraflores...........	2	549	10,980
Gamboa.............	3	885	18,565
Totals.............	9	2,785	56,565

Eugenio Rios, a Spaniard employed in the Pacific Division, check No. 122101 was run over and killed by I. C. C. engine No. 102 at Miraflores on Monday afternoon, August 12.

Horatio McLenan, a Jamaican, employed in the Pacific Division, check No. 127237 was killed at Miraflores Locks on Sunday, August 11, by the falling of a form from one of the lock walls which carried him along with it. Two other laborers fell at the same time and were injured.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

COROZAL.

During the absence of Mr. Dwelle, who is confined to the hospital with fever, Mr. W. T. Compton is in charge of the work at Corozal.

The next moving picture exhibition will be held Friday evening, August 16.

CULEBRA.

The local bigpin tournament started off Monday evening, August 5, with six teams entered, as follows: "Exploders," "Wreckers," "Piledrivers," "Track shifters," "Unloaders," and the "Spreaders." The standing, follows:

	Won.	Lost.	P. C.
Track shifters	2	1	.667
Unloaders	2	1	.667
Spreaders	1	1	.500
Piledrivers	1	1	.500
Wreckers	1	2	.333
Exploders	1	2	.333

Empire opposed Culebra in bowling on Saturday evening, August 10, when the former took two out of three games, as follows:

Culebra.				Empire.			
MacRae	135	143	142	King	165	130	155
Warner	180			Gus	159	129	185
Herrington	172	158	122	Warr	162	150	173
Tuley	122	179	158	Whelan	157	147	189
Anderson	165	149	180	Edwards	204	180	200
Hobart		143	104				
Total	774	772	706		847	736	902

A basketball game was played between Empire and Culebra on Friday evening, August 9, resulting in a score of 16 to 8 in favor of Empire.

A three-team local basketball league has been organized. The following are the teams: "Pirates," "Tigers," and "Athletics." Each team will play the other team twice. The league opened on Tuesday evening, August 6.

The volleyball league closed on Tuesday evening, August 6, when the "Reds" defeated the "Blues." The final standing is, as follows:

Name.	Won.	Lost.	P. C.
Reds	19	11	.633
Blues	16	14	.533
Whites	10	20	.333

The following are the names of the men that were chosen by the committee on the all-Culebra volleyball team: Mr. John Warner, server; Mr. Van Zandt, center; Mr. Mitchell, net; Mr. Herrington and Mr. Stillwell (tie), net; Mr. Armstrong and Mr. Cook (tie), guard; Mr. Hoffman, back center.

EMPIRE.

The standing of the local basketball league is, as follows:

Name.	Won.	Lost.	P. C.
English	3	1	.750
Americans	2	2	.500
Germans	1	3	.250

GORGONA.

The standing and lineup in the local bigpin tournament to date is, as follows:

Team No. 1—Reitman, Johnson, Cogan, M. Van. Won 1; lost 2.

Team No. 2—Lowe, Regan, Ferguson, H. Otis. Won 4; lost 5.

Team No. 3—Burmeister, Calloway, Wright, Sims. Won 4; lost 2.

Team No. 4—Miner, Darling, Bentley, King. Won 1; lost 2.

Team No. 5—Rhodes, Gebhard, McCain, Davis. Won 2; lost 1.

Mr. T. S. Booz, who has been confined in the hospital since July 12, has returned and will leave for the United States on August 21.

CRISTOBAL.

On Friday night, a simultaneous checker match was held at which a number of local players and invited guests played Mr. F. L. Bernsee. There were 23 present and 43 games were played. Mr. Bernsee won 41 games, drew one with Mr. Fleming, and lost one to Mr. Gartrell of Gatun.

On Wednesday night, the Trio Oriental Company will give a return engagement at the clubhouse. An entire change of program will be given, with the exception of the "Tank of Neptune" mystery, which will be repeated.

A local bowling league was started in tenpins during the past week. Six teams have been entered. During the week ending August 10, the following high scores, were made on the local alleys: Buser, 237, 204, 211, 201 200; Bullard, 214; Gibson, 255; Russell, 205; Collins, 212; Barrett, 210; Chamberlain, 215, 220; Witmer, 203.

GATUN.

The medals for the recent duckpin tournament arrived and were given out to the winners at the moving picture entertainment on Wednesday evening, August 14.

The Hindoo magical trio will give a return engagement on August 20.

The work of replaning the bowling alleys of the clubhouse was begun on Wednesday, August 14.

The membership is steadily increasing, 388 having been reported on August 1. An effort is being made to bring the number up to 400 by September 1.

A large number of new books, mostly recent fiction, were added to the library during the past week.

Interest in bowling is on the increase. The receipts for the month of July were the highest in over six months. Gatun took the last two games in the match with Empire on Saturday evening, August 10. The scores were:

Gatun.				Empire.			
Swallow	154	171	163	Pinney	170	162	150
Dickson	101	159	147	Sawtelle	188	164	149
Barte	174	186	165	Goolsby	144	170	159
Hodges	147	147	184	Danielson	153	175	145
Oettli	156	178	182	Drake	146	150	156
Total	732	841	841		801	821	759

The standing of the local tenpin tournament on August 10 was, as follows:

Team.	Won.	Lost.	P. C.
Illinois	5	1	.833
Pennsylvania	4	2	.666
Washington	3	3	.500
New Jersey	3	3	.500
New York	3	3	.500
Ohio	3	3	.500
Missouri	2	4	.333
Oklahoma	1	5	.166

PORTO BELLO.

A farewell reception was tendered Mr. Sollenberger by the members of the Porto Bello clubhouse upon the eve of his leaving for the United States.

Under the auspices of the Porto Bello chess club three prizes were offered the winners of the recent handicap chess tournament. The first was won by Mr. Joseph Mackintosh, the second by Mr. C. D. Morgan, and the third by Mr. C. K. Rogers, who won from Mr. C. W. Morgan, the last two tying for third place. The prizes were: First, a set of chessmen; second, a club pin, and third, a pocket chess board wallet. The following rules governed the playing: Handicaps were based on the results of the previous tournament. Handicaps ranged from one move to a queen and one pawn. Eighty per cent of the games had to be played to be eligible for prizes.

The boy scout movement has been started in Porto Bello.

The handball court is soon to be enlarged. This will provide a good opportunity for all men interested in handball to get in condition for a tournament which will be begun soon.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 21, 1912. (75th meridian time):

DATE.	Low	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.	P.M.
August 15	......	5.10	11.27	5.32	11.48
			P.M.		
August 16	......	5.55	12.14	6.00	......
August 17	12.34	6.40	1.00	7.04	......
August 18	1.20	7.28	1.50	7.52	......
August 19	2.10	8.18	2.40	8.44	......
August 20	3.02	9.08	3.38	9.45	......
August 21	4.04	10.10	4.42	11.02	......

Band Concerts.

A band concert will be given by the Isthmian Canal Commission Band at Culebra, C. Z., Sunday, August 18, 1912, at 4.45 p. m. The program follows:

1. March—*Hero of the Isthmus*............Lampe
(Respectfully dedicated to Col. Geo. W. Goethals.)
2. Selection—*Dr. De Luxe*...............Hoschna
3. Waltz—*Girls of Baden*.................Komzak
4. Overture—*Hungarian Lustspiel*......Keler Bela
5. Operatic Potpourri—*The Broadway Review*.Lampe
(Extracts from the latest Broadway hits.)
6. (a)—*Oh you beautiful doll*.......Ayer and Moret
(b)—*There's a girl in Havana*..Goetz and Sloane
7. Grand fantasie — *Home, sweet home, the world around*........Lampe
The composer describes the manner in which "Home, Sweet Home" is played in different countries as follows: 1, Air; 2, Germany; 3, Spain 4, Russia; 5, Italy; 6, Scotland; 7, Hungary; 8, China; 9, Ireland; 10, America.
8. Medley—*In the Shadows*.............Williams
9. March—*Stars and Stripes*.............Sousa

A band concert will be given by the Isthmian Canal Commission Band at Cristobal, C. Z., Wednesday, August 21, at 8 p. m. The program will be the same as above, with the exception that the third number will be a waltz "Wedding of the Winds," played by request.

OLIVER KIMBALL, *Acting Musical Director.*

The next Sunday concert will be given at Hotel Tivoli, on August 25.

Family Quarters.

Applications for married quarters on file on July 31, 1912, were, as follows:

DISTRICT.	List No. 1.	List No. 2.
Ancon	9 (5)	67 (21)
Ancon Hospital	....	3
Balboa	....	39 (9)
Bas Obispo	....	24 (4)
Colon Hospital	1	1
Corozal	1 (1)	57 (14)
Cristobal	....	121 (17)
Culebra	....	43
Empire	....	46 (16)
Gatun	....	101 (12)
Gorgona	3 (2)	68 (32)
Las Cascadas	....	35 (6)
Pedro Miguel	....	48 (9)
Porto Bello	....	7 (6)
Toro Point	....	5 (1)
Total	14 (8)	665(147)

NOTE—The figures in parentheses show the number of applicants already occupying regular or nonhousekeeping family quarters at stations other than those at which applications are filed.

Efficiency of Central Division Steamshovels.

A statement of steamshovel efficiency for July, 1912, covering the machines in the Central Division, is given below:

	Whole division.	Empire.	Culebra.	Pedro Miguel.
Daily average number of shovels at work	38.71	16.85	20.92	.94
Hours under steam	8,052.00	3,504.00	4,352.00	196.00
Hours at work	5,254.75	2,313.25	2,779.50	162.00
Hours unavoidably detained	263.16	105.25	153.33	4.58
Hours delayed by switching, handling material and other cause	2,534.08	1,085.30	1,469.16	29.42
Percentage of time under steam lost by other than unavoidable delays	31.71	30.97	32.61	15.00
Cubic yards removed by steamshovels	1,335,590	462,473	822,464	50,653
Average per hour under steam	165.87	131.98	189.00	258 42
Average per hour at work	254 17	199.92	259.04	318.90
Average per day at work	1,326.96	1.055,87	1,511.88	2,067.47
Average per shovel per month	34,500	27,446	39.314	53,886

Misdirected Letters.

ANCON, C. Z., August 14, 1912.

The following insufficiently addressed letters originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressees:

Bansfield, William A.
Gaines, Mrs. G. S. (2d. cls)
Generally, M.
Hill, O. F.
Hayes, R. E.
Lockhart, A. B.
Mayland, Jerome
Miller, Russell
Morgan, James
Odle, Mrs. Clarence (2d. cls)
Paul, C. B.
Powel, Miss Mary A.
Prior, Benjamin F.
Quezada, Belen
Rendinell, Frank
Rose, Chas. D.
Rose, Paul C.
Sarlee, George H.
Stine, C. W.
Thomas, Miss Henrietta
Thomas, Emmitt
Warren, Mrs. R. G.
Westberg, Mrs. J. E. (3)
Wilkins, H. E.
Wilson, Miss Ida

Auction Sale of Calves and Dairy Cow at Ancon Hospital Dairy.

On Saturday, August 24, at 10 a. m., there will be sold at public sale at the Ancon Hospital dairy, ten calves between the ages of one and two and one-half months, and one dairy cow about five years old. Terms of sale, cash.

The dairy is located near the insane asylum buildings in the rear of the hospital grounds.

CHAS. F. MASON, *Superintendent.*

OFFICIAL CIRCULARS.

Labor Day, a Holiday.

CULEBRA, C. Z., August 7, 1912.

CIRCULAR No. 454:

Labor Day, Monday, September 2, 1912, will be observed as a holiday throughout the Canal Zone, and, as far as possible, all work will be suspended on that day.

GEO. W. GOETHALS, *Chairman.*

Itemized Bills.

CULEBRA, C. Z., August 9, 1912.

CIRCULAR No. 455:

All bills issued hereafter by the Isthmian Canal Commission, except those issued by one department or division against another department or division, and except those issued against the Canal Zone Government and the Panama Railroad Company, should be fully itemized, as follows:

Bills for material—Dates of sale or use, quantity and kind of material, unit and total prices, and the rate and amount of surcharges should be given.

Bills for labor—Dates work was done, designation of employes engaged and number of each, units of time in hours or days, the rate of pay and total amount for each rate, and the rate and amount of surcharge added to total labor charge.

Bills for other service—On bills for electric light, switching, rental of equipment, or other miscellaneous service, show dates of service, unit and total prices, and basis on which charge is made.

The extensions of all items should be made and the bills should be properly totaled.

The detailed data required herein may be given on Form X-140, or on other forms, but such data must accompany all copies of bills.

Care must be taken to give on each bill the correct name and address of the responsible party.

Bills against employes must show on their faces the lodge or club, etc., for which the material or service is furnished, if not furnished solely for the employe himself.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Malicious Interference with Boundary Marks.

CULEBRA, C. Z., August 9, 1912.

CIRCULAR No. 332-A:

Section 429 of the Penal Code of the Canal Zone provides, as follows:

> Every person who either:
>
> 1. Maliciously removes any monument erected for the purpose of designating any point in the boundary of any lot or tract of land, or a place where a subaqueous telegraph cable lies; or
> 2. Maliciously defaces or alters the marks upon any such monument; or
> 3. Maliciously cuts down or removes any tree upon which any such marks have been made for such purpose, with intent to destroy such marks,
>
> is guilty of a misdemeanor.

Section 436 of the same Code, as amended, provides, as follows:

> Every person who wilfully injures, defaces, or removes any signal, monument, building, or appurtenances thereto, placed, erected, or used by persons engaged in the United States Coast Survey, or Isthmian Canal Commission, or any public service company within the Canal Zone, knowing the same to be a boundary or survey monument, is guilty of a misdemeanor.

Articles 908, 909 and 910 of the Penal Code of Panama, imposing a penalty on any person who removes or alters boundary monuments are, as follows:

> ARTICLE 908. Every person who knowingly removes any monument, tree, wall, border, fence, ditch, palisade, landmark, or any other sign placed or known as a point in the boundary limit between the land, field, or any other property and that belonging to some other person; and every person who removes any of the said monuments shall be liable to arrest for a period not less than six days nor more than one month, and a fine of from ten to eighty pesos; such person being under the obligation of replacing the monument which was destroyed or removed; and in case this is not possible, he shall erect a like monument.
>
> ARTICLE 909. Every person who knowingly commits any such offense with respect to the property of another shall be liable to a fine amounting to one-half of the abovementioned penalties.
>
> ARTICLE 910. Every person who knowingly takes away or removes any monument erected for the purpose of designating the boundaries of a department, province, district, police district, or any other territorial division, as provided by the Constitution and by-law, shall be liable to arrest for a period not less than ten days nor more than two months, and to a fine of from twenty to one hundred pesos.

The above provisions of the laws of the Canal Zone and the Republic of Panama are quoted for the information and guidance of all concerned.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Stopovers on Twenty-Four Trip Tickets.

CULEBRA, C. Z., August 6, 1912.

HEADS OF DEPARTMENTS AND DIVISIONS:

In the future no stopover privilege will be allowed on employes' 24-trip tickets, this action having become necessary on account of continued abuse of the privilege.

GEO. W. GOETHALS, *Chairman.*

Roadmaster of the Panama Railroad.

COLON, R. P., August 9, 1912.

All Concerned: Effective this date, Mr. M. B. Connolly is appointed roadmaster of the Panama railroad. He will report to the engineer of maintenance, and have general charge of the construction and maintenance of all tracks of this company.

F. MEARS,
Acting General Superintendent.

Supplies for the Canal.

The following steamers, with supplies for the Isthmian Canal Commission, arrived at the ports of Cristobal and Colon, during the week ending August 10:

Panama, August 3, from New York, with seven kegs lamp parts, for Atlantic Division; 12 cases machinery, 600 pieces steel bars, for Pacific Division; 45 barrels repair parts, 500 pieces steel plates, 24 pieces brake beams, 48 bundles brake heads, for Mechanical Division; 10 cases brass tubing, for superintendent of erection; 12 pieces girders, 442 barrels tiling, for Panama Railroad Company; 37 kegs bolts, 26 cases babbitt metal, 15 cases warehouse trucks, 10 cases range parts, 71 cases sales books, 25 bales waste, 251 pigs lead, 252 pieces steel angles, 10 kegs wire nails, 18 cases mining machinery, 100 bundles wrapping paper, 10 cases nuts, for stock; and a miscellaneous cargo, the whole consisting of 2,740 packages, weighing 400 tons.

Odenwald, August 3, from Hamburg, with 31 cases thrust screws, for superintendent of erection.

Greenbrier, August 4, from New York, with 11 cases tape, 14 cases packing, 610 pieces steel rails, for stock.

Prinz Joachim, August 6, from New York, with 15 kegs galvanized unions, 12 bundles steel, for stock.

Almirante, August 7, from New York, with 11 cases tape, 50 bundles galvanized sheets, 10 cases paint, for stock; 23 cases incandescent lamps, for Mechanical Division; 13 cases valve machinery, 110 cases gate machinery for superintendent of erection.

Atenas, August 8, from New Orleans, with 8,336 pieces lumber, for Mechanical Division; 122 pieces lumber, for Pacific Division; 3,048 pieces lumber, 137 pieces piling, 450 cases fire brick, 300 packages switch parts, 22 drums oils, 160 drums kerosene, 199 cases kerosene, for stock.

Sverre, August 9, from Baltimore, with 48 pieces maple lumber, 17 cases glass, 1,080 bundles splice bars, for stock; 1,128 bundles steel bars, for Pacific Division; one pile driver hammer, 112 pieces steel girders, for Panama Railroad Company; 1,575 car wheels, for Mechanical Division; 1,596 bundles structural steel, 92 cases castings, 141 packages rack castings, 27 cases valves and parts, 739 cases valve machinery, 85 cases lock gate machinery, for superintendent of erection.

Allianca, August 9, from New York, with 300 cases linseed oil, 995 pieces lumber, 75 cases nuts, 88 bundles galvanized sheets, 131 cases air brake material, for stock; 133 packages structural steel, for Panama Railroad Company; 156 cases coil springs, for Pacific Division; and a miscellaneous cargo, the whole consisting of 2,680 packages, weighing 725 tons.

Rainfall from August 1 to 10, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	1.31	5	3.51
Balboa	1.51	5 & 6	4.60
*Miraflores	1.15	6	2.72
Pedro Miguel	1.00	4	1.88
Rio Grande	.72	4	2.30
Central Section—			
Culebra	.91	4	2.28
*Camacho	.62	4	1.88
Empire	.88	4	2.09
Gamboa	1.99	2	3.43
*Juan Mina	.58	6	2.31
Alhajuela	1.72	6	5.07
*El Vigia	2.78	6	5.30
*Gorgona	1.41	2	2.93
*Frijoles	.86	3	2.59
*Monte Lirio	.27	3	.65
Atlantic Section—			
Gatun	3.35	3	4.29
*Brazos Brook	1.92	3	3.60
Colon	.85	7	1.43
Porto Bello	.61	7	†.86

*Standard rain gage—readings at 5 p. m., daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., August 9.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, August 10, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia	Alhajuela	Gamboa	Gatun Lake.
Sun., August 4	131.1	96.0	47.5	32.9
Mon., August 5	129.4	96.0	48.1	33.2
Tues., August 6	130.2	95.8	48.8	33.1
Wed., August 7	128.4	94.3	47.6	33.2
Thurs., August 8	127.0	93.3	46.1	33.3
Fri., August 9	126.4	92.8	45.0	33.1
Sat., August 10	126.1	92.6	44.7	32.9
Height of low water to the nearest foot	125.0	91.0	44.0	

CLASSIFIED EXPENDITURES.

A statement of classified expenditures of the Isthmian Canal Commission to June 30, 1912, follows:

PEEIODS.	Department of Civil Administration.	Department of Law.	Department of Sanitation.	Department of Construction and Engineering	General Items.	Fortifications.	Total.
To June 30, 1909	3,427,090.29	....	9,673,539.28	69,622,561.42	78,022,606.10	....	160,745,797.09
Fiscal year, 1910	709,351.37	....	1,803,040.95	26,300,167.05	2,863,088.83	....	31,675,648.20
Fiscal year, 1911	755,079.44	....	1,717,792.62	27,477,776.19	3,097,959.72	....	33,048,607.97
July, 1911	72,895.22	2,527.35	137,635.83	2,089,361.82	312,920.11	....	2,615,340.33
August, 1911	74,768.45	1,878.27	156,954.79	2,287,506.30	355,087.42	86,243.14	2,962,438.37
September, 1911	64,905.24	1,805.83	146,912.23	2,212,702.66	234,233.58	86,275.56	2,746,835.10
October, 1911	64,143.49	1,586.71	152,252.71	2,751,377.24	323,154.80	32,061.45	3,324,576.40
November, 1911	66,491.92	2,502.39	138,404.22	2,346,719.44	200,614.00	93,952.56	2,848,684.53
December, 1911	66,013.49	1,854.62	143,745.59	2,467,291.16	316,891.32	60,794.07	3,056,590.25
January, 1912	74,737.19	2,581.53	114,637.59	2,228,910.21	451,899.54	148,983.75	3,021,749.81
February, 1912	71,769.71	2,330.07	115,308.91	2,326,058.48	249,658.11	73,488.96	2,838,614.24
March, 1912	67,304.46	2,002.52	123,461.41	2,489,702.10	290,937.83	87,356.62	3,060,764.94
April, 1912	62,768.03	2,111.60	123,398.89	2,426,334.10	161,038.21	97,177.11	2,872,827.94
May, 1912	67,106.31	1,830.87	125,493.80	2,564,408.39	59,379.11	98,496.15	2,916,714.63
June, 1912	67,495.06	1,717.40	142,185.15	2,707,366.20	*135,887.50	348,052.29	3,130,928.60
Total	5,711,919.67	24,729.16	14,814,763.97	152,298,242.76	86,803,581.18	1,212,881.66	260,866,118,40

*Denotes credit.

COMMISSARY DEPARTMENT.

Retail prices of cold storage provisions for the week beginning August 11, 1912:

FRESH MEATS.	*Price.*
Mutton—Stewing, per pound	6
Shoulder, neck trimmed off (4 pounds and over), per pound	9
Entire forequarter (not trimmed, 10 pounds and over), per pound	8
Leg (8 to 10 pounds), per pound	17
Cutlets, per pound	18
Short cut chops, per pound	20
Lamb—Stewing, per pound	6
Entire forequarter, neck trimmed off, per pound	9
Leg (5 to 8 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24
Veal—Stewing, per pound	10
Shoulder, for roasting (not under 4 pounds), per pound	12½
Chops, shoulder, per pound	16
Chops, per pound	24
Loin for roasting, per pound	24
Cutlets, per pound	28
Pork—Loin chops or roast, per pound	18
Beef—Suet, per pound	2
Soup, per pound	5
Stew, per pound	8
Plate, per pound	9
Corned, No. 1, per pound	14
Corned, No. 2, per pound	12
Chuck roast (3 pounds and over), per pound	12
Pot roast, per pound	15
Rib roast, second cut (not under 3½ pounds,) per pound	16
Rib roast, first cut (not under 3 pounds), per pound	18
Sirloin roast, per pound	19
Rump roast, per pound	19
Porterhouse roast, per pound	20
Steak, chuck, per pound	12½
Round, per pound	13
Rib, per pound	18
Sirloin, per pound	19
Rump, per pound	19
Porterhouse (not less than 1½ pounds), per pound	20
Tenderloin (Western), per pound	25
Venison (Imported), Stew, per pound	6
Forequarter (not under 6½ pounds), per pound	9
Rack (not under 5½ pounds), per pound	20
Saddle (not under 7½ lbs.), per pound	20
Leg (not under 9 pounds), per pound	20
Chops, per pound	24
Cutlets, per pound	24

MISCELLANEOUS.	
Caviar, Russian in ¼-lb. jars, jar	89
Livers—Beef, per pound	11
Calf, each	60
Half, each	30
Steak, Hamburger, pkg	13
Sausage—Bologna, per pound	10
Frankfurter, per pound	12
Lieberwurst, per pound	13
Devonshire Farm, per pound	19
Sweetbreads—Beef, per pound	25
Eggs, fresh, dozen	27
one-half dozen only	14
Bluefish, per pound	†12
Halibut, fresh, per pound	12
Salmon, fresh, per pound	16
Fluke, fresh, per pound	10
Shads, fresh, each	50
Roes, shad, pair	25

POULTRY AND GAME.	*Price.*
Chickens—Fancy roasting, milk fed, large, each	1.40
Chickens—Fancy roasting, milk fed, med., each	1.10
Fancy roasting, corn fed, about 5½ pounds each	1.15
Fancy roasting, corn fed, about 4½ pounds, each	1.00
Fowls, each ††60, 70, 80, 90,	1.00
Ducks, Western, about 4½ pounds, each	1.35
Broilers, milk fed, each	70
Broilers, corn fed, each	60
Turkeys, per pound	23
Squabs, each	35
Capons, each	2.10
Ducks, teal, per pair	50
Ducks, Blackhead, pair	60
Partridges, pair	1.30
Grouse, per pair	1.30
Pheasants, per pair	1.30

CURED AND PICKLED MEATS.	
Ham—German, Westphalia, per pound	36
Sugar cured, per pound	20
Sliced, per pound	21
Half, for boiling, per pound	22
Boiled, per pound	28
Hocks, per pound	?8
Beef, salt, family, per pound	12
Bacon—Breakfast, whole piece, per pound	23
sliced, per pound	24
Pork, salt, family, per pound	13
Ox tongues, each	1.00
Pigs' feet, per pound	9
Tongues, per pound	18

DAIRY PRODUCTS.	
Butter—Creamery, special, per pound	38
Sheffield Farms, extra, fancy per lb.	46
Cheese—Philadelphia cream, cake	10
Roquefort, per pound	45
Young America, per pound	22
Swiss, per pound	28
Edam, each	1.00
Parmesan, lb.	35
Neufchatel, cake	6
Gouda, per pound	34
Snappy, cake	10
Milk (Certified), per bottle	**20
Butter, bottle	**15
Fer-mil-lac, bottle	**20
Ice cream, quart	?25
½-gallon	?50

VEGETABLES AND FRUITS.	
Beets, per pound	*4
Celery, per head	*8
Cabbage, per pound	4
Cucumbers, per pound	5
Carrots, per pound	*4
Egg plant, per pound	10
Lettuce, per pound	†12
Onions, per pound	*3½
Potatoes, white, per pound	3½
sweet, per pound	3
Squash, per pound	5
Turnips, per pound	*3
Tomatoes, per pound	5
Yams, per pound	3
Apples, per pound	10
Canteloupes, each	8
Grapefruit, each	4
Lemons, dozen	24
Limes, per 100	80
Plums, per pound	10
Oranges, Jamaica, per dozen	12
Pineapples, each	†12½
Watermelons, each	30
Peaches, per pound	8

---

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

††Fowls weigh each about as follows: 3, 3½, 4, 4½ and 5 pounds. Prices are based accordingly; when size ordered is not in stock next lightest weight is supplied and refund note sent for difference.

?Sold only from commissaries; no orders taken for delivery.

TELEPHONE DIRECTORY CHANGES.

The following additional changes have been made in the list of subscribers published in the Panama Railroad Company's telephone directory as of May 15, 1912. Telephone subscribers are requested to make a note of these changes in their copy of the directory:

ADDITIONS.

Exchange.	Number.	Name.	Location.	Dept.	Office or Residence.
Empire	191-B	C. O. Simmons	Empire	Commercial	Residence
Colon	140	Drydock machine shop	Mt. Hope	Atl. Div.	Office
Colon	123	Electrical shop, Hotel Washington	Colon	P. R. R.	Office
Gorgona	16-2	Wrecking car, Foreman Joyce	Gorgona	Mech.	Office
Colon	243-R	Bakery	Cristobal	Commissary	Office
Panama	106	Construction foreman	P. R. R. station, Panama	P. R. R.	Office
Panama	108	A. A. Greenman	Ancon	Land	Residence
Corozal	27	Balboa tower	Balboa	Pac. Div.	Office

REMOVALS.

Exchange.	Number.	Name.	Location.	Dept.	Office or Residence.
Empire	67-B-2	D. J. McCauley	Paraiso	Cent. Div.	Residence
Colon	43-B	D. A. Starbuck	Colon	P. R. R.	Residence
Empire	120-R-2	J. V. Donahue	Bas Obispo	Cent. Div.	Residence
Panama	137-A	Balboa hotel	Balboa	Sub. Dept.	Office
Gatun	125	W. H. Graham	Gatun	Atl. Div.	Residence
Gatun	43-B	Mess No. 68, Spillway	Gatun	Sub. Dept.	Office
Gatun	11	Moise Conrad	Gatun	Atl. Div.	Office
Gatun	98 1	Dredge *No. 85*	Gatun	Atl. Div.	Office

CHANGE IN NUMBERS.

Exchange.	Name.	Location.	Old Number.	New Number.	Remarks.
Empire	Sanitary Officer	Bas Obispo	119-R	115-B-2	Office
Empire	Reservoir	Rio Grande	724-3	730-3	Office
Gatun	Inspector of emergency dam	Gatun	127	730	Office

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Ship	Line	Day	Month	Date
Colon	P. R. R.	Friday	Aug.	9
Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21
Allianca	P. R. R.	Tuesday	Aug.	27
Colon	P. R. R.	Tuesday	Sept.	3
Advance	P. R. R.	Monday	Sept.	9
Panama	P. R. R.	Saturday	Sept.	14
Allianca	P. R. R.	Friday	Sept.	20

CRISTOBAL TO NEW YORK.

Ship	Line	Day	Month	Date
Allianca	P. R. R.	Thursday	Aug.	15
Colon	P. R. R.	Wednesday	Aug.	21
Advance	P. R. R.	Tuesday	Aug.	27
Panama	P. R. R.	Tuesday	Sept.	3
Allianca	P. R. R.	Sunday	Sept.	8
Colon	P. R. R.	Sunday	Sept.	15
Advance	P. R. R.	Saturday	Sept.	21
Panama	P. R. R.	Friday	Sept.	27
Allianca	P. R. R.	Thursday	Oct.	3

NEW YORK TO COLON.

Ship	Line	Day	Month	Date
Santa Marta	U. F. C.	Wednesday	Aug.	7
Turrialba	U. F. C.	Saturday	Aug.	10
Prinz August Wilhelm	H.-A.	Saturday	Aug.	10
Metapan	U. F. C.	Wednesday	Aug.	14
Oruba	R. M.	Saturday	Aug.	17
Prinz Sigismund	H.-A.	Saturday	Aug.	17
Tivives	U. F. C.	Saturday	Aug.	17
Zacapa	U. F. C.	Wednesday	Aug.	21
Prinz Joachim	H.-A.	Saturday	Aug.	24
Thames	R. M.	Saturday	Aug.	31
Almirante	U. F. C.	Wednesday	Aug.	28
Carrillo	U. F. C.	Saturday	Aug.	31
Prinz Eitel Friedrich	H.-A.	Saturday	Aug.	31
Santa Marta	U. F. C.	Wednesday	Sept.	4
Prinz August Wilhelm	H.-A.	Saturday	Sept.	7
Turrialba	U. F. C.	Saturday	Sept.	7
Metapan	U. F. C.	Wednesday	Sept.	11
Trent	R. M.	Saturday	Sept.	14

COLON TO NEW YORK.

Ship	Line	Day	Month	Date
Almirante	U. F. C.	Thursday	Aug.	15
Prinz Eitel Friedrich	H.-A.	Monday	Aug.	19
Thames	R. M.	Tuesday	Aug.	20
Carrillo	U. F. C.	Tuesday	Aug.	20
Santa Marta	U. F. C.	Thursday	Aug.	22
Prinz August Wilhelm	H.-A.	Monday	Aug.	26
Turrialba	U. F. C.	Tuesday	Aug.	27
Prinz Sigismund	H.-A.	Monday	Sept.	2
Trent	R. M.	Tuesday	Sept.	3
Tivives	U. F. C.	Tuesday	Sept.	3
Zacapa	U. F. C.	Thursday	Sept.	5
Prinz Joachim	H.-A.	Monday	Sept.	9
Sixaola	U. F. C.	Tuesday	Sept.	10
Almirante	U. F. C.	Thursday	Sept.	12
Prinz Eitel Friedrich	H.-A.	Monday	Sept.	16

NEW ORLEANS TO COLON.

Ship	Line	Day	Month	Date
Parismina	U. F. C.	Saturday	Aug.	10
Abangarez	U. F. C.	Saturday	Aug.	17
Heredia	U. F. C.	Wednesday	Aug.	21
Atenas	U. F. C.	Saturday	Aug.	24
Parismina	U. F. C.	Saturday	Aug.	31

COLON TO NEW ORLEANS.

Ship	Line	Day	Month	Date
Atenas	U. F. C.	Thursday	Aug.	15
Heredia	U. F. C.	Thursday	Aug.	15
Parismina	U. F. C.	Thursday	Aug.	22
Abangarez	U. F. C.	Thursday	Aug.	29

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

Hamburg-American steamers leave Colon for New York, via Kingston at 10 a. m., on sailing dates. The *Prinz August Wilhelm* and *Prinz Joachim* sail at 2 p. m., and call at Santiago de Cuba, on both outward and homeward voyages.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans, via Limon, on Thursdays, at 2 p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 2 p. m.

The following ships arrived at, or departed from the port of Balboa during the week ending August 10:

Arrivals—August 5, *Ecuador*, from Guayaquil; August 5, *Quilpue* from Valparaiso; August 6, *Peru* (P. S. N.), from Guayaquil; August 7, *Mantaro*, from Callao; August 10, *City of Panama*, from San Francisco.

Departures—August 4, *Manavi* to Buenaventura; August 5, *Portland*, to San Francisco; August 5, *Chile*, to Guayaquil; August 5, *Pachitea*, to Callao; August 5, *Limari* to Valparaiso; August 8, *Pennsylvania*, to San Francisco; August 8, *Stanley Dollar*, to San Francisco.

CANAL RECORD

Volume V. ANCON, CANAL ZONE, WEDNESDAY, AUGUST 21, 1912. No. 52.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications
THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Report.

The report of the Chairman of the Isthmian Canal Commission for the month of July is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed account of the progress of the Canal work in all departments and divisions.

Break in Obispo Diversion.

A portion of the Obispo Diversion was carried away by a slide of 300,000 cubic yards on the east bank of the Culebra Cut, between 10.40 and 10.45 a. m., August 20, and the diversion has since been flowing into the Cut. The break occurred about 150 yards north of the concrete flume through which the diversion passes, near Station 1645, about three miles from the north end of the Cut. To stop the flooding of the Cut to the south, a temporary dike will be thrown across it opposite the toe of the slide, which extends about halfway across the channel.

The portion of the Cut between the slide and Gamboa will be flooded during the time necessary for relocating the diversion to the east of the break, but the pumps at Gamboa will be worked to capacity to prevent, if possible, a rise of water beyond a depth of 10 feet in the flooded channel.

Contract for Hydroelectric Station Equipment.

Award has been made on the bids for supplying the auxiliary equipment required for the Gatun hydroelectric station, which is to be situated near the Spillway in Gatun Dam. The requisite equipment, of which advertisement was made in Circular 715 from the Washington Office of the Isthmian Canal Commission, was described in THE CANAL RECORD of July 3, 1912. Award has been made to the General Electric Company for the control switchboard, station panel, circuit-breaker, switchboard, light and power switchboard, gatehouse switchboard, 2,200-volt switching group, light and power transformers, and station battery. A small quantity of crane trolley material was awarded to the Niles-Bement-Pond Company. No award for the air compressor will be made.

At present, work on the hydroelectric station consists of excavating for the building footings and machine foundations. It is expected that this excavation will be completed about September 1, 1912. The materials for the headgates and the penstocks have been delivered upon the Isthmus and erection will be begun soon.

Pacific Entrance Excavation.

In order to allow the ladder dredge *Corozal* to be moved up into Culebra Cut about July 1, 1913, for excavating at the bottoms of slides and removing silt, it has been decided to make a greater portion of the excavation for the Pacific entrance channel in the dry.

To this end, locomotives Nos. 101, 106, 108, 113 and 121 are shortly to be transferred to the pit south of Miraflores Locks, from the service of the Panama railroad, and two locomotives of 201 or 301-class will be transferred from the Central Division. At the same time, a total of 66 steel dumps cars will be transferred from the Panama railroad and from work at Mount Hope and Toro Point. Before September 1, dumping on the mole at the Cristobal piers will be discontinued, in order to enable the transfer of thirty 12-yard steel dump cars and a 70-ton steamshovel from the Mount Hope borrow pit. During October, the equipment now in use for supplying backfill for Gatun Locks will be transferred in its entirety. As further equipment can be spared from the work in Culebra Cut, it will also be put at work in the Pacific Division. Prior to these changes, six steamshovels have been excavating south of Miraflores Locks.

The spoil of the additional dry excavation will be dumped in the flats between the Rio Grande Diversion and Corozal, assisting the monitor pumps in the reclamation of contiguous swamps. Spur tracks are being laid from the Balboa sand track to the site of the new dumps.

Signal Lights on Colon Breakwater.

CULEBRA, C. Z., August 15, 1912.

Major F. C. BOGGS, *Chief of Office*,
Washington, D. C.

SIR: I am in receipt of the following communication from the division engineer of the Atlantic Division:

"For several months past two gas buoys showing white lights have marked the eastern part of the Colon breakwater, having been placed there, in order that ships would not cross that part of the breakwater where dumping from scows has been going on. The trestle has been extended to within 375 feet of the extreme end of the breakwater, and it has been necessary to remove the westerly gas buoy. This leaves the breakwater marked at the present time with one white light at the extreme end, and two red lights, one six feet above the other, at the extreme end of the trestle."

Please convey this information to the various departments and bureaus interested.

Respectfully,
GEO. W. GOETHALS, *Chairman*.

Gatun Dam Spillway.

The concrete work in the Spillway of Gatun Dam is over 90 per cent completed, 204,444 cubic yards, out of a total of 225,000, having been placed at the close of work on August 17. A statement of the amount laid each working day last week, and of the total in place, follows:

DATE.	Concrete Laid.	Hours worked	No. Mixers.
August 12	68	5.30	1
August 13	12	1.00	1
August 14	54	5.15	1
August 15	70	8.00	1
August 16	36	4.15	1
August 17	12	1.00	1
Total	252	26.00	1
Previously reported	204,192		
Grand total	204,444		

Steamship Sunk by Collapse of Wharf.

A section of wharf at Balboa, about 185 feet in length, collapsed at half-past one in the morning of August 17, and the steamship *Newport*, moored alongside, sank. No one was killed or injured. The *Newport*, which belongs to the Pacific Mail Steamship Company, and is registered in New York, is a single-screw iron steamship of 2,735 tons gross register, 326 feet long, 38 feet two inches beam, 23 feet nine inches in depth, and was built at Chester, Pennsylvania, in 1880. It was loaded with about 1,500 tons of general cargo, consigned for the most part to ports of Central America and Mexico, and was due to sail during the afternoon of the 19th. A committee, consisting of Mr. S. B. Williamson, chairman, Lieut. F. Mears, and Mr. W. G. Comber, is investigating the cause of the accident.

The section of wharf which collapsed is a part of the "angle annex," extending at an angle from the land end of the "steel pier" to the coal wharf. The wharf is 60 feet wide, with heavy timber flooring, and is supported on piles. It was built by the Panama Railroad Company in 1905. Two railway tracks, paralleling it on the land side, are included with it under the corrugated roof and sides. The electrically operated cranes are mounted on a 10-foot track along the outer edge.

After the first crashing of collapse was heard the structure sank steadily. Within about two minutes, two of the steel cargo-handling cranes, which had been opposite the bow of the *Newport*, toppled over. One fell inward, toward the center of the collapsing section, while the other fell across the vessel, forward of the wheelhouse. Only the masts, the funnel, and the superstructure of the wheel-

NOTES OF PROGRESS.

(Continued.)

house are visible above water at high tide. Immediately on noticing the collapse of the wharf, the policeman on patrol aroused the crew of the *Newport*, who escaped to safety. The policeman then reported the disaster to headquarters, from which a report was transmitted to the Chairman and Chief Engineer, and by three o'clock, men and equipment were being assembled for the work of reclamation. Three railway wrecking cranes and derrick barge *No. 19* have been engaged in the removal of débris, and a diver has been ascertaining conditions within and about the submerged vessel.

Notice to Mariners and Others.

The Island of Perico in the Bay of Panama is now a military reservation, and mariners and the public generally are warned against trespassing thereon for the purpose of beaching boats, or for any other purpose.

Construction work will soon begin and mariners and others are warned against coming within range of danger from blasts.

(Sgd.) Geo. W. Goethals,
Chairman and Chief Engineer.

Civil Service Examinations.

A supply of the Manual of Examinations for the fall of 1912 has been received.

Examinations for the following named positions are scheduled to be held at Culebra, probably on September 29: Apprentice plate printer, Bureau of Engraving and Printing; electrotyper molder, Government Printing Office; guard, U. S. Penitentiary Service; pressman Government Printing Office; stereotyper, Government Printing Office.

Applications for the abovenamed examinations will not be received in this office after September 6. This date will be changed if necessary. In requesting information, the kind of examination desired should be specifically mentioned.

All instructions found in application forms and in the Manual of Examinations concerning an examination desired should be carefully read and understood before filing application, to avoid unnecessary returning for correction. In answering question 4 in applications, residence must be shown in a State, and county thereof, of the United States, up to the time of making application. The date of examination should be omitted in application forms.

Isthmian Civil Service Board.
Culebra, C. Z., August 17, 1912.

Construction Costs.

Referring to the statement of construction costs published in a supplement in The Canal Record of August 7, the unit cost shown under "Naos Island breakwater" should be $0.2467, instead of $2.4673. Although this work is shown under "Pacific Division," being at the Pacific end of the Canal, it is wholly done by the Central Division.

Pilots, Mates, Masters, Engineers, Chauffeurs.

Examination for pilots, mates, masters and engineers; and for chauffeurs, will be held by the Board of Local Inspectors at the Administration Building, Ancon, on Wednesday, August 28, 1912, at 8 a. m. All applications for licenses as chauffeur must secure from the Department of Civil Administration, Executive Office, Ancon, forms for application, and information respecting the filling out of the same, not later than the day previous to the examination. All applicants for examination must be present at the Administration Building at 8 a. m., on the abovementioned date with papers in proper form. In addition, applicants for chauffeurs' licenses must demonstrate their ability properly to operate an automobile, and must have the automobile with them.

PERSONAL.

Lieut.-Col. D. D. Gaillard sailed for New York on the steamer *Cristobal* on Tuesday, August 20, on leave of absence.

Mr. S. B. Williamson sailed for the United States on the steamer *Colon* on Wednesday, August 21, on his annual leave of absence.

Mr. Henry Goldmark sailed for the United States on the *Colon* on August 21, to spend his annual leave.

CONCRETE WORK IN THE LOCKS.

Over 90 per cent of the concrete for the locks is in place, the amount at the close of work on August 17 being 3,924,048 cubic yards, out of a total of approximately 4,302,563. A total of 18,889 cubic yards of concrete was laid in the locks during the week ending August 17.

GATUN LOCKS

About 95 per cent of the concrete for the system of three twin locks at Gatun has been laid, the amount in place at the close of work on August 17 being 1,892,342 cubic yards, out of a total of 2,000,000. A statement of the amount of concrete placed in the locks each working day of the week ending August 17, and of the total follows: and a similar statement for the work in the Spillway at Gatun Dam is published elsewhere in this issue.

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant. 2-cubic yard mixers.			Large stone.	Total.
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	
August 12	310	5.10	3					311
August 13	206	3.26	3					208
August 14	98	1.38	2					102
August 15	302	5.02	3					302
August 16	118	1.58	2					118
August 17	342	5.42	3					342
*Portable mixers on band				7				
Total	1,376	22.56	2.67	7				1,383
Previously reported								1,890,959
Grand total								1,892,342

*The seven yards shown under "portable mixer and hand" are reinforced concrete, and were placed on the following dates: August 12, one yard; August 13, two yards, portable mixer; August 14, four yards, hand.

PEDRO MIGUEL LOCK.

Concrete work in the lock at Pedro Miguel is over 98 per cent completed, 874,302 cubic yards, out of a total of 889,827, bucket measurement, having been placed at the close of work on August 17. The record for each of the working days of last week, follows:

Date.	Auxiliary Plant.						Large stone.	Total.
	2-cubic yard mixers.			⅓-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers		
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*	
August 12	16	1.00	1	251	30.00	5		267
August 13	26	2.00	1	231	25.50	5		257
August 14	22	2.00	1	205	29.00	4		227
August 15	46	3.00	1	200	26.00	4		246
August 16	40	3.00	1	176	22.00	3		216
August 17	30	2.00	1	98	19.00	4		128
Total	180	13.00	1	1,161	151.50	4.17		1,341
Previously reported							4,493	872,961
Grand total							4,493	874,302

MIRAFLORES LOCKS.

Over 81 per cent of the concrete for the system of two twin locks at Miraflores was in place August 17, the total amount on that date being 1,157,404 cubic yards, bucket measurement, out of a total of approximately 1,412,736. The record for each working day last week, follows:

Date.	Construction Plant. 2-cubic yard mixers.			Auxiliary Plant.							Total.
				2-cubic yard mixers.			⅓-cubic yard mixers.				
	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Concrete placed.	Hours worked.	No. of mixers	Large stone.	
	Cu. Yds.			*Cu. Yds.*			*Cu. Yds.*			*Cu. Yds.*	*Cu. Yds.*
Aug. 11	362	11.17	2								362
Aug. 12	1,166	36.25	7	1,210	17.58	2	515	40.50	6		2,891
Aug. 13	666	25.58	7	1,031	14.42	2	399	42.00	6		2,097
Aug. 14	976	25.25	7	1,146	16.30	2	232	26.50	4		2,354
Aug. 15	1,032	36.83	7	1,392	19.75	2	215	25.00	4		2,639
Aug. 16	866	28.42	7	1,424	19.75	2	467	48.00	7		2,757
Aug. 17	1,252	40.42	7	1,424	19.25	2	389	41.00	8		3,065
Total	6,320	203.92	7	7,628	107.05	2	2,217	223.00	5.83		16,165
Previously reported										3,693	1,141,239
Grand Total										3693	1,157,404

CANAL WORK IN JULY.

Monthly Report of the Chairman and Chief Engineer to the Secretary of War.

CULEBRA, C. Z., August 17, 1912.

The Honorable the Secretary of War,
Washington, D. C.

SIR: I have the honor to submit the following report of operations on the Isthmus for the month of July, 1912.

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

ITEM.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry	Cubic yards	19,605	1,336,366	228,569	1,584,540
Work excavation, wet	Cubic yards	564,568	...	482,129	1,046,697
Total work excavation	Cubic yards	584,173	1,336,366	710,698	2,631,237
Plant excavation, dry	Cubic yards	...	...	...	...
Plant excavation, wet	Cubic yards	...	...	...	...
Total plant excavation	Cubic yards	...	...	2,200	2,200
Total Canal excavation	Cubic yards	584,173	1,336,366	712,898	2,633,437
Material placed in dams	Cubic yards	315,868	...	53,970	369,838
Concrete placed in locks and dams	Cubic yards	9,450	...	78,035	87,485
Explosives used	Tons (Gross)	38.98	184.87	33.46	257.31
Rock drilled	Feet	35,561	416,251	76,451	528,263
Tracks removed	Miles	...	6.61	...	6.61
New tracks laid	Miles	2.15	8.81	4.67	15.63
Rock crushed	Cubic yards	...	...	61,053	61,053
Cement used	Barrels	16,176	175	79,739	96,090
New roads built	Miles	.20	...	...	.20
Water mains laid	Feet	300	228	3,348	3,876
Sewers laid	Feet	696	...	1,389	2,085
Open drains and ditches dug	Feet	66,608	67,755	600	134,963
Average daily force	...	4,700	6,725	6,868	18,293
Average rainfall	Inches	12.48	10.50	10.65	10.92

First Division, Office of the Chief Engineer.

MASONRY AND LOCK STRUCTURES.

The material under contract for work designed in this subdivision is being inspected by the force of the General Purchasing Officer in the United States, and the erection work on the Isthmus is being conducted by the division engineers and the erection subdivision of this office, the inspection of this work being cared for by the masonry and lock structures subdivision. This subdivision is also charged with general inspection of masonry work of all the locks.

INSPECTION OF RISING STEM GATE VALVES.

The work of preparing rising stem gate valve chambers and installation of valves, etc., is progressing satisfactorily, the following work having been completed to the end of the month:

Gatun—Of the six side wall intake valve chambers, all have been completed and the valves have been installed. Of the 28 sets of operating valves, three sets have been completed, including installation of valves. The work on nine of the remaining 25 sets of valve operating chambers has been about 20 per cent completed.

Pedro Miguel—Work is proceeding in 11 of the 12 sets of operating valve chambers, but no valves have yet been placed.

Miraflores—No work has been done in any of the 18 sets of operating valve chambers in the locks at this point.

INSPECTION OF SPILLWAY GATES AND CAISSONS.

Gatun—The work of erection of the 14 Spillway gates was commenced on July 8, 1912, and the following work has been completed: The estimated tonnage assembled and bolted up is approximately 435 tons, out of a total of 532 tons, which includes the four horizontal girders, two end posts, all cross frames and intercostals, the two bottom rows of sheathing plates with their horizontal and vertical cover plates, and back bracing in all the 14 gates for the Spillway at this point. The reaming of the rivet holes for the connection between the ends of intercostals and bottom girders has been done on all gates, and the reaming of the holes for the similar connection to the next girder above has been done on four gates. The gates have all been releveled and riveting will probably be begun in the very near future, as soon as the remaining top row of sheathing plates has been placed and properly bolted. No work has been done on caisson. Erection, not including riveting, is about 82 per cent completed.

Miraflores—No work has been done on the erection of the eight spillway gates and caisson at this point.

LOCK GATES AND PROTECTIVE DEVICES.

Up to the 20th of July, a total of 55,352 tons of steel plates and shapes was accepted at the rolling mills, of which 1,616 tons were accepted between June 20 and July 20. This practically completes the material required, except for the spare parts. A total of 42,163 ton of riveted structural steel has been shipped from the Rankin shops, or about 83 per cent of the total contract weight of this class. Of the last item, 3,024 tons were shipped between June 20 and July 20. About 30 per cent of the material for the gates in the intermediate lock at Gatun and about six per cent of that for the upper and middle gates in the upper lock at Miraflores remain to be shipped; also, about 75 per cent of the steel for the safety and lower gates in the upper lock, and nearly all of the steel for the gates in the lower lock at Miraflores.

LOCK GATE ERECTION.

Gatun— Upper guard gates, 54 feet 8 inches high, leaves Nos. 37 to 40, inclusive—During the month, the aligning and babbitting of the bearings and sills was completed, so that the only work remaining on the four leaves on August 1 was the cementing of leaves Nos. 39 and 40, the testing for watertightness of leaf No. 40, some painting, and the erection of the footwalks on the leaves. The erection of these leaves began May 27, 1911.

Upper gates, 77 feet high, leaves Nos. 33 to 36, inclusive—All structural material was in place before July 1, and nearly all rivets driven. A small amount of riveting was done during the month, so that all sheathing rivets have now been driven in the leaves of the west chamber, and 85 per cent of those of the east chamber. Besides this, the castings were attached to the quoin end of leaf No. 35 and partly fitted. The quoin end of leaf No. 33 is ready for castings, but the quoin end of leaf No. 34, and the miter ends of all four leaves have not yet been ground. The erection of these leaves began October 9, 1911.

Middle gates, upper lock, 77 feet high, leaves Nos. 29 to 32, inclusive—All structural material was in place, all interior rivets had been driven, and nearly all holes in the sheathing reamed before July 1. During the month, only a small amount of reaming and riveting was done; but very few rivets had been driven in the sheathing by August 1. The erection of these leaves began January 27, 1912.

Safety gates, upper lock, 77 feet high, leaves Nos. 25 to 28, inclusive—All structural material on these leaves had been put in place at the beginning of the month, and all interior rivets driven. Since then, the bolting up of the sheathing has been completed in all the leaves, and about half of the holes for rivets in the sheathing reamed, but none of the sheathing rivets driven. The erection of these leaves began April 1, 1912.

Lower gates, upper lock, 77 feet high, leaves Nos. 21 to 24, inclusive—The erection of these leaves began June 29, 1912. Since then, skeletons of all four leaves have been erected to their full height and a small amount of interior reaming and riveting done. Thirteen per cent of the upstream sheathing has also been put in place.

Middle gates, lower lock, 77 feet high, leaves Nos. 9 to 12, inclusive—On July 1, the skeletons were in place, a small amount of interior riveting had been done and about 15 per cent of the sheathing raised, but not reamed or riveted. By August 1st, 70 per cent of the interior rivets had been driven, 64 per cent of the sheathing raised, but no work done on the reaming or riveting. The erection of these gates began April 12, 1912.

Pedro Miguel— Upper guard gates, 54 feet 8 inches high, leaves Nos. 50 to 53, inclusive—All structural material was in place and the reaming and riveting was practically completed before July 1. Half of the end plates had been ground, but no castings attached. By August 1st, 70 per cent of the plates had been ground and the end castings secured and partly fitted to the quoin posts of leaves Nos. 50 and 53. The erection of these leaves began August 7, 1911.

Upper gates, 79 feet high, leaves Nos. 54 to 57, inclusive—The structural work was all in place before July 1, and all interior rivets driven; eight per cent of the holes in the sheathing had been reamed, but no rivets in the sheathing driven. During the month, a small amount of bolting and reaming, but no riveting, was done, raising the reamed holes to 17 per cent of the total in the four leaves. No grinding for end castings has been done. The erection of these leaves began January 29, 1912.

Middle gates, 79 feet high, leaves Nos. 58 to 61, inclusive—By July 1st, 65 per cent of the skeletons had been raised. By August 1, the skeletons had been completely erected, 27 per cent of all the sheathing plates attached, and about 40 per cent of the interior rivets had been driven. No holes were reamed in sheathing, nor rivets driven. The erection of these leaves began June 18, 1912.

Safety gates, 79 feet high, leaves Nos. 62 to 65, inclusive—All structural work was in place prior to July 1, and all interior rivets driven, 70 per cent of the holes in the sheathing had been reamed and 27 per cent of the rivets driven. By August 1st, 94 per cent of these rivet holes were reamed and 47 per cent of the rivets driven. No ends were ground nor castings attached. The erection of these leaves began December 15, 1911.

Lower gates, 79 feet high, leaves Nos. 66 to 69, inclusive—By July 1, the skeletons were completely erected and 98 per cent of the interior rivets driven. About 50 per cent of the sheathing had been attached, but none of it reamed nor riveted. ByAugust 1, the interior riveting was completed and all the sheathing in place, but none of it reamed or riveted. The erection of these leaves began May 1, 1912.

Lower guard gates, 47 feet 4 inches high, leaves Nos. 70 to 73, inclusive—No work was done on these leaves during July. The skeletons of leaves Nos. 70 to 71 are erected to their full height, but not reamed or riveted.

Miraflores—Material for one set of erection bridges has been moved to the upper end of the lock from Pedro Miguel, but was not in place by the end of the month.

The total tonnage of lock gate material erected on the Canal to August 1, without regard to its being fully reamed or riveted, was 23,102 tons, out of a total of 58,000 tons, or about 40 per cent. Of this, 3,471 tons, or about six per cent was erected during July. The total number of field rivets driven was 1,173,230, or 20 per cent, of which 209,736, or about 3.64 per cent, were driven in July.

The tonnage erected was about 10 per cent less than in the preceding month, which was due, in part, to the taking down and moving of one set of erection bridges.

The number of rivets driven was 23 per cent in excess of the highest previous record, but is still below the rate of progress necessary to complete the gates on contract time.

LOCK GATE RECESS COVERS.

All recess covers (36) at Gatun have been erected and riveted and 21 grouted in place, one being riveted and one grouted in July. At Pedro Miguel, all of the 20 covers have been erected and riveted and twelve grouted in place.

CHAIN FENDERS.

The material manufactured by the contractor for one complete chain fender, and some of the hawsepipe castings for other fenders, was shipped from the United States during the latter part of July.

INSPECTION OF OPERATING MACHINERY AND ELECTRICAL EQUIPMENT.

The force of this subdivision, reporting directly to this office, has cared for the technical matters relating to inspection, as follows:

(*1*) *For the rising stem and cylindrical valve machines, motors, and limit switches, purchased under Circular 614*—Rising stem gate valve machine No. 260 was tested during the month. The valve and machine were erected complete at the permanent location in the west lock wall at Gatun. The valve machine was raised and lowered through the 18-foot stroke of the valve, and the operation of the valve and machine was satisfactory. No leakage or hydraulic test was made on this machine during the month. Forty-one rising stem gate valve machines have been shipped from the works of the contractor, and, to date, 25 machines have been received on the Isthmus, in addition to the two trial machines. The various groups, stated in the contracts as spare parts not required to be tested, are being delivered in satisfactory order.

Sixty cylindrical valve machines have been shipped from the works of the contractor, and, to date, 53 machines have been received on the Isthmus, in addition to the two trial machines.

Six auxiliary culvert valve machines have been shipped from the works of the contractor, four of which have been received on the Isthmus to date.

All the contractor's drawings in connection with the electrical equipment ordered under Circular 614 have been approved, and it is expected that the manufacture will proceed at a rapid rate.

The contractors for the limit switches have completed the manufacture of all material for this class, and it was expected that the limit switches would be shipped from the United States by July 15. The 232 limit switches, completing those ordered under Circular 614, have all been received.

The material under the various contracts with the Wheeling Mold and Foundry Company is still being shipped from Wheeling, West Virginia, via New York, owing to the strike on the docks at Baltimore.

Observations of the insulation of the trial motors purchased under this circular were continued during the month.

(*2*) *For the gate and girder hoisting machinery for the emergency dams, purchased under Circular 616*—The test of the first hand operating mechanism for the gate hoisting machine, held on July 20, was not satisfactory. The tests on the first girder hoisting machine were completed at the works of the manufacturer and were satisfactory. Notice was received that the second gate hoisting machine, as well as the first hand operating gear for this machine, would be ready for test about the middle of July.

(*3*) *For the rack railway and other material relative thereto, purchased under Circulars 619, 636-D, 628, 635, 647, 666, and 688*—Out of the 59 items of all of the above circulars, 42 items are 100 per cent completed and satisfactory progress is being made on the delivery of the balance of the items.

(*4*) *For the gate operating machines, Class 1, and miter forcing machines, Class 2, and motors for same, Classes 3 and 4, purchased under Circular 627*—Shipments of material applying on the miter gate moving machines are now being made to the Isthmus from the works of the contractor. A group system for shipments on these machines, similar to that used by the contractors for the rising stem gate valve machines, was put into effect.

(*5*) *For the equipment for the hydroelectric station, purchased under Circular 648*—The first turbine was submitted for inspection by the contractors on July 17, and was, on test, found to be satisfactory. The contractors have shipped the last 12 sections of the penstocks, which have been received on the Isthmus, completing the order for this class of material.

Two of the 100-k. w., direct-connected exciters have been set up with a temporary shalt and run through preliminary heat runs. Three motor-driven exciters were tested at Schenectady. The second generator has been practically completed.

Shipments of the sluice gates and headgate electrical equipment have begun.

(*6*) *For electric towing locomotive, purchased under Circular 650*—The work is progressing slowly on the first locomotive.

(*7*) *For the Spillway gate machines and pumps, purchased under Circular 661*—The first set of chains for the Spillway gate machines has been completed at the works of the contractor and passed satisfactory proof tests. It is expected that the contractors will have the first machine ready for test within a short time. The three motors under this circular are to be submitted by the contractors for final test.

(*8*) *For control apparatus for all locks, purchased under Circular 679*—Drawings for material to be supplied under this circular are being submitted by the contractors.

(*9*) *For motors, pumps, float switches, and starters, purchased under Circular 681*—Work is progressing satisfactorily. No deliveries, however, have been made to date.

(*10*) *For crossovers, purchased under Circular 688*—Practically all drawings of the crossovers have been completed, and the work is progressing satisfactorily at the works of the contractors.

(*11*) *For cable, purchased under Circular 695*—Fifty-three thousand feet of 3-conductor, varnished cambric insulation, lead-covered, 2300 volt cable were received during the month. This applies on the order for 170,000 feet placed the latter part of April. On July 23, 1912, the General Purchasing Officer was authorized to award to the General Electric Company additional cable, as follows: Two hundred and thirty thousand feet of 5-conductor, and 420,000 feet of 8-conductor.

The following is a summary of the work accomplished in the field by the erecting forces.

Atlantic Division locks—The force installing machinery and electrical equipment on the Isthmus assembled 1,824 feet of towing track, including the assembly of rack sections, channels, anchor bolts and T-rails, and bending of the same. (This does not include the installation of conductor slot covers and brackets.) A total of 7,326 feet of towing track has been placed and partly finished to date.

Work of installing rising stem gate valve machines Nos. 262 and 263 is 25 per cent completed. The work on valve machines Nos. 256 and 257 is 15 per cent completed. During the month, work was in progress on the installation of 16 rising stem gate valves. Work on the installation of 20 cylindrical valve machines, Nos. 540 to 559, excepting No. 549, is 75 per cent completed. Work on the installation of four auxiliary culvert valve machines, Nos. B-1 to B-4, is 20 per cent completed. The floors and pedestals for 10 miter gate moving machines have been placed.

Pacific Division locks—Bulkhead forms were placed at eight rising stem gate valves; roller train track was permanently installed in two of the rising stem gate valves. Nineteen cylindrical valve machines were cleaned, set up and leveled, and templates were placed in nine of these valves. Sixteen hundred and fourteen feet of towing track were installed, making the total to date 5,526 feet.

EMERGENCY DAMS.

At the mills, the following material was manufactured during the month: Nickel steel, 696 tons; structural carbon steel, 609 tons; turning and wedging machinery, 41 tons.

At the shops, the following material was fabricated during the month: Structural carbon steel, 272 tons; turning and wedging machinery, 126 tons.

The condition of the work for each dam is, as follows:

Gatun, east dam—Nickel steel, 100 per cent completed and shipped; structural carbon steel, including gates, 100 per cent punched, 100 per cent assembled, 98 per cent finished, and 82 per cent shipped; turning and wedging machinery, 100 per cent completed and shipped.

West dam—Nickel steel, 99 per cent completed and shipped; structural carbon steel, with exception of gates, 100 per cent punched, 100 per cent assembled, 98 per cent riveted, 98 per cent finished, and 82 per cent shipped; gates, 90 per cent completed; turning and wedging machinery, 99 per cent completed and shipped.

Pedro Miguel, east dam—Nickel steel, 99 per cent rolled, 25 per cent punched, 10 per cent assembled, and five per cent riveted; structural carbon steel, 90 per cent rolled, including gates; turning and wedging machinery, 85 per cent completed in foundries. and now being machined in the shops.

West dam—The stage of manufacture of this dam is the same as for the east dam at Pedro Miguel.

Miraflores, east dam—Nickel steel, 60 per cent rolled; structural carbon steel, with exception of gates, 40 per cent rolled; turning and wedging machinery, 30 per cent completed in foundries, and now being machined in shops.

West dam—The stage of manufacture of this dam is the same as for the east dam at Miraflores.

INSPECTION ON THE ISTHMUS.

Gatun, east dam—Material delivered at site, 1,482 tons. All wicket girders, and rack and track segments for turning quadrant, have been placed in temporary position.

Gatun, west dam—Material delivered at site, 673 tons.

AIDS TO NAVIGATION.

Construction—Ranges Nos. 1-2, 9-11, and 13-14, Pacific Division—Same status as when last reported, with the exception that wrought iron gallery railings were placed on each of the towers during the month.

Range No. 5-6, Atlantic Division—Same status as when last reported, excepting that the wrought iron gallery railing has been placed on the front tower during the month.

Ranges Nos. 21–22 and 24–25, Gatun Lake section—Same status as when last reported.

Range No. 1–2, Gatun Lake section—The reinforced concrete railing around the base of the front tower was completed, and the wrought iron gallery railing was placed during the month.

Range No. 5–6, Gatun Lake section—The cableway was completed, forms made for the submarine foundation, concrete laid in the bottom slab, and in the first 12 feet of submarine foundation for the front tower.

Range No. 3–4, Gatun Lake section—The site for the front tower was located during the month.

General plant of Lighthouse Subdivision at Balboa—The following reinforced concrete material was cast during the month: Thirty-six buoy sinkers 48 by 48 inches; 33 buoy sinkers 24 by 24 inches; two foundations for beacons, and 15 reinforced concrete piles were driven for three beacon foundations in the Pacific Division.

West breakwater light, Limon Bay—The reinforced concrete caisson was completed up to a height of 19 feet and then floated out of the drydock to the powder dock at Mindi, where it was completed up to a height of 25 feet. The work at Mindi was carried on from a barge carrying the concrete mixer and all material.

Atlantic Division.

GATUN LOCKS.

Excavation—During the month, three shovels were engaged in borrow pit excavation for the locks backfill and construction tracks, 116,646 cubic yards of material being removed.

Backfill—Backfilling behind the side and center walls of the locks was continued. The quantity placed during the month aggregated 112,670 cubic yards. The total placed to August 1 amounted to 1,666,845 cubic yards.

Receiving and issuing material—The receipts of sand exceeded the issues by 18,278 cubic yards; the consumption of cement exceeded the receipts by 5,896½ barrels; the issues of rock amounted to 10,880 cubic yards, no rock being received.

Mixing and placing plants—Plant No. 1 and all portable mixers were kept in satisfactory operation during the month.

Concrete work—There was an increase of 1,996½ cubic yards in the amount of concrete laid, as compared with the figures for the preceding month. The daily average for the 26 working days was 311 cubic yards, as compared with a daily average of 244 cubic yards during June. The total amount of concrete placed during the month was 8,092½ cubic yards. The bucket measurement exceeded the place measurement by 18 cubic yards. Of the total, 3,150½ cubic yards were placed in the upper lock, 2,200 cubic yards in the middle lock, and 2,742 cubic yards in the lower lock. The concrete work for the entire lock system was 94.19 per cent completed at the end of July.

OPERATION OF THE PERMANENT CONCRETE CONSTRUCTION PLANT.

Length of working day (hours)............	9.00
Average number of hours per day worked, per strand of cableway laying concrete (actual working time)..................	1.07
Average number of mixers per day.........	1.80
Average hourly output per mixer (actual working time) cubic yards...............	57.68
Average amount of concrete laid per hour, per strand of cableway (actual working time) cubic yards.....................	21.75
Concrete laid (cubic yards) cableways.....	5,090.00
Concrete laid (cubic yards) derricks.......	2,975.00
Concrete laid (cubic yards) portable mixers	44.50
Total amount of concrete laid (cubic yards)	8,110.50

GATUN DAM.

Construction during the month increased the total fill, as determined by cross-section of the material in place, by 315,868 cubic yards, making the total amount in place 19,674,899 cubic yards. On August 1, the dam was 90.9 per cent completed.

An arbitrary reduction of 65,000 cubic yards has been made for slow consolidation in those sections of the Dam not covered by monthly cross-section. Of this, 50,000 cubic yards has been charged against dry fill, and 15,000 cubic yards against wet fill. This is an increase of 25,000 cubic yards over the monthly arbitrary reduction heretofore made, such increase having been shown to be necessary by the semiannual survey.

The regular semiannual survey of the whole Dam was completed in June, and office work finished during the past month. Although an arbitrary reduction of 40,000 cubic yards has been made each month to allow for slow consolidation outside of the limits of the monthly cross-sections, the complete survey shows it necessary to make a still further allowance of 144,080 from the monthly to agree with the net yardage in place above the original surface. With this correction, the total net yardage in place amounted to 19,674,899 cubic yards. The semiannual survey also shows that the total yardage of the completed Dam will amount to 21,994,111 cubic yards.

Hydraulic fill—The dredges increased the hydraulic fill by 62,749 cubic yards, making the total hydraulic fill in place on July 31st, 10,017,827 cubic yards.

Dry fill—The material received from the steamshovels, amounting to 109,039 cubic yards, was placed on the north and south toes of the Dam, east and west of the Spillway, making the total dry fill in place 9,972,940 cubic yards.

GATUN SPILLWAY.

Backfill—There were 259 cubic yards of material placed in the backfill during the month, making the total backfill, behind the Spillway walls, on August 1st, 16,495 cubic yards.

Concrete—The work of placing concrete was continued, the amount placed during the month aggregating 1,357 cubic yards. The concrete work for the Spillway was 90.56 per cent completed.

Excavation—There was no excavating done during the month, the total remaining at 1,591,086 cubic yards.

HARBOR AND CHANNEL SECTION.

Dredging from the Ocean to Mindi—Five dredges removed 360,655 cubic yards of earth and 53,508 cubic yards of rock from the Canal prism. In addition, the dredge *Caribbean* removed 20,470 cubic yards of earth from the approach channel to dock No. 11. The dredge *Mindi* removed 3,851 cubic yards of earth from the *Caribbean's* berth at the water dock, and 14,575 cubic yards of coral rock from the slip at the Cristobal terminal docks of the Panama railroad. On July 31, 1912, 40 feet of water could be carried from zero to zero, plus 2,100 feet, 35 feet to mile post 4, plus 3,100 feet; 30 feet to mile post 4, plus 3,150 feet; 20 feet to mile post 6, plus 1,900 feet.

Approach to Gatun Locks—Three dredges removed 141,125 cubic yards of earth, and 9,280 cubic yards of rock, from the Canal prism.

PORTO BELLO.

During the month, 7,805 cubic yards of rock were shipped to Toro Point for use in construction of the breakwater.

ROCK TRANSPORTATION SERVICE.

In connection with this service, plant steamed 1,965 miles, handled 163 barges, and carried 1,590 passengers.

WEST BREAKWATER, COLON.

During the month, the single track trestle was extended 220 lineal feet. On August 1, the trestle extended 11,147 lineal feet from shore; 8,678 cubic yards of Porto Bello rock were unloaded, making the total to August 1st, 73,811 cubic yards.

MUNICIPAL ENGINEERING.

The reservoirs, water mains, sewers, roads, and oil pipe lines were maintained and extended as required to facilitate construction work.

Work was continued on the Colon street improvements.

Central Division.

During the month of July, the total amount of material excavated in the Central Division was 1,336,366 cubic yards, of which 259,147 cubic yards were classified as earth, and 1,077,219 cubic yards as rock. Of the total quantity excavated, 1,335,590 cubic yards were removed by steamshovels, and 776 cubic yards by hand.

The daily average number of steamshovels at work during the month was 38.71, and the total number of shovel days was 1,006½, as compared with 40.10 at work during the month of June, and 1,002½ shovel days.

For comparison with the work done by steamshovels during the corresponding month of the previous year, the following table has been prepared:

Period.	Excavated by shovels.	Classification of material.		Av. No. of shovels at work	W'kg days.	Av. yards per shovel day
		Rock.	Earth.			
1911:	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds.*			*C. Y.*
July....	1,337,833	1,194,420	143,413	40.70	25	1,314.82
1912:						
July....	1,335,590	1,077,219	258,371	38.71	26	1,327.73

Rainfall at Empire: 1911, 4.00 ins.; 1912, 9.15 ins.

The above table shows the average output per shovel to be .98 per cent greater in July, 1912, than in the corresponding month of 1911.

The total mount of material excavated from the prism in the Culebra section of the Central Division in July, 1912—1,335,590 cubic yards—was the greatest record in that section for the month of July, except July, 1911, when 1,337,833 cubic yards were removed.

The total estimated amount of material to be removed in the Central Division, according to the revised estimate of July 1, 1911, was 101,801,296 cubic yards. On July 1, 1912, the total estimated amount of material (dry excavation) to be removed from the Canal prism was increased by 4,314,925 cubic yards, on account of slides and removal of material on higher levels for the prevention of slides, making the total estimated amount of material to be removed 106,116,221 cubic yards. On August 1, 1912, 95,738,047 cubic yards had been removed, leaving 10,378,174 cubic yards yet to be taken out, in order to complete all dry excavation in the Central Division. Thus it will be seen that 90.22 per cent of all excavation in the Central Division was accomplished at the close of the month of July, and that there remained 9.78 per cent yet to be removed.

Considering the two sections which compose the Central Division, the excavation completed, and that to be completed at the close of July operations was, as follows:

CULEBRA SECTION.	*Cu. Yds.*
Completed	83,353,392
To be completed	10,378,174
CHAGRES SECTION.	*Cu. Yds.*
Completed	12,384,655

From the above figures, it will be seen that the Culebra section, known locally as "Culebra Cut," was 88.93 per cent completed, with 11.07 per cent to be completed. The Chagres section was completed so far as dry excavation is concerned, but it is estimated that it will be necessary to remove about 300,000 cubic yards of wet excavation in this section.

During the month, 71,421 cubic yards of material were dumped on the embankment for the new roadbed for the relocation of the Panama railroad, increasing the total amount used for this purpose to 4,308,997 cubic yards.

During the month, no material was furnished to the Atlantic Division for use in the construction of the Gatun Dam, the total amount remaining at 5,374,310 cubic yards.

There were furnished to the Panama railroad 11,171 cubic yards of material for the terminals in Colon.

The daily average number of laborers at work on the whole division during the month was 6,145, while the daily average number of gold employes was 580.

Pacific Division.

DISTRICT NO. 1—LOCKS, DAMS, AND DRY EXCAVATION.

Excavation—The total excavation during the month amounted to 161,499 cubic yards, of which 76,823 cubic yards were classified as earth, and 84,676 cubic yards as rock.

Filling and embankment— During July, 16,150 cubic yards of dry filling were added to the prism of the Pedro Miguel west dam, increasing the total amount of material in place at the close of the month to 598,591 cubic yards. The backfill at Pedro Miguel was increased by 13,588 cubic yards, the total quantity in place at the close of the month aggregating 668,125 cubic yards.

At Miraflores, 37,820 cubic yards were added to the dry fill in the toes of the west dam. The total quantities of dry and hydraulic filling in place at the end of the month were 1,279,444 cubic yards, and 661,048 cubic yards, respectively. The backfill was increased by 79,287 cubic yards, the total aggregating 704,574 cubic yards at the end of the month.

Pedro Miguel Lock—At Pedro Miguel, the construction of the north center guide wall was practically completed during the month. Excavation in the Canal prism between the Pedro Miguel and Miraflores locks was continued, two steamshovels being employed. Excavation on the high ground along the east side of the locks was carried on during the month with one steamshovel, and one steamshovel was used to excavate the foundation for the northeast wing wall. The spoil from these four shovels was utilized for backfilling behind the lock walls, for topping the west dam, and for filling the south guide wall. The amount of iron placed in the masonry aggregated 150,014 pounds.

Concrete work—The total amount of concrete and large stone laid at Pedro Miguel was 11,959 cubic yards, as compared with 10,061 cubic yards during June. The concrete was placed, as follows: Three thousand eight hundred and ninety-five cubic yards in the north center guide wall; 2,512 cubic yards in the northwest wing wall; 414 cubic yards in the east wall; 122 cubic yards in the center wall; 279 cubic yards in the west wall; 3,154 cubic yards in the northeast wing wall; 764 cubic yards in the southeast wing wall; 248 cubic yards in the south center guide wall; 30 cubic yards in the floors; 62 cubic yards around ducts, 56 cubic yards of which were placed in operating tunnel A, and six cubic yards in operating tunnel B; and 479 cubic yards in the core wall of the west dam.

OPERATION OF THE AUXILIARY CONSTRUCTION PLANT AT PEDRO MIGUEL.

Length of working day (hours)	8.00
Average number of hours per day worked laying concrete and large stone (actual working time)	4.84
Average number of mixers per day	5.85
Average hourly output per mixer (actual working time) cubic yards	14.49
Large stone laid, cubic yards	25.00
Concrete laid, cubic yards	11,934.00
Total concrete laid, cubic yards	11,959.00

Mixing plant consisted of one 2-cubic yard mixer, and a daily average of 4.85⅓-cubic yard mixers. Placing plant consisted of a daily average of 2.23 locomotive cranes or derricks, and a daily average of 4.81⅓-cubic yard mixers discharging directly into forms.

Miraflores Locks—Dry excavation, principally in the Canal prism, southof the locks, was continued with seven steamshovels, the spoil being used for backfilling behind the east and west lock walls, and for filling the west dam. Work was continued on the construction of the north center guide wall, and creosoted piles were driven in the foundation of the northeast wing wall. The basin on the east side of the locks was pumped out and preparations were started for the excavation of a portion of the spillway dam foundation. The lowering of chamber crane No. 2 from the upper to the lower lock chamber was completed during the early part of the month, and this crane has since been placing concrete in the center wall of the lower lock. The amount of iron placed in the masonry aggregated 452,494 pounds.

Concrete work.—The total amount of concrete and large stone laid at Miraflores was 66,076 cubic yards, as compared with 68,498 cubic yards for June. The concrete was placed, as follows: Three thousand five hundred and eighty-five cubic yards in the north center guide wall; 6,004 cubic yards in the east wall; 36,614 cubic yards in the center wall; 13,656 cubic yards in the west wall; 50 cubic yards in the southeast wing wall; 140 cubic yards in the northeast wing wall; 210 cubic yards in the northwest wing wall; 5,645 cubic yards in the floor; 122 cubic yards around ducts, 74 cubic yards of which were placed in operating tunnel A and 48 cubic yards in operating tunnel B; and 50 cubic yards in the core wall of the west dam.

OPERATION OF THE PERMANENT AND AUXILIARY CONCRETE CONSTRUCTION PLANTS AT MIRAFLORES.

	Permanent Plant.	Auxiliary Plant.
Length of working day (hours)	8 & 12.00	8 & 12.00
Average number of hours per day laying concrete and large stone (actual working time)	7.03	6.51
Average number of mixers per day	6.65	8.19
Average hourly output per mixer (actual working time) cubic yards)	27.88	26.88
Average amount of concrete and large stone laid per hour per berm or chamber crane, (actual working time) cubic yards	48.45	....
Large stone laid	....	....
Concrete laid (cubic yards)	49,664.00	16,490.00
Total concrete laid (cubic yards)	49,664.00	16,490.00

Two berm cranes, four chamber cranes and two 2-cubic yard mixers worked twelve hours a day. Auxiliary mixing plant consisted of three 2-cubic yard mixers, daily average 2.58, and eight ⅓-cubic yard mixers, daily average 6.15. Auxiliary placing plant consisted of a daily average of 3.77 ½-cubic yard mixers discharging directly into forms, and a daily average of 3.88 locomotive cranes or derricks.

DISTRICT NO. 2—DREDGING, BALBOA SHOPS, AND SHIPWAYS.

The following is a statement of the output of the five dredges which were in operation during the month, and of the amount of material excavated hydraulically:

DREDGE.	Type.	WORK.		PLANT.		Total.	Remarks.
		Earth.	Rock.	Earth.	Rock.		
		Cu. Yds.	*Cu. Yds.*	*Cu. Yds.*	*Cu. Yds,*	*Cu. Yds.*	
Cardenas	Dipper	2,000	16,550	2,200	....	20,750	Place measurement
Corozal	Ladder	28 345	45,472	....	....	73,817	Place measurement
Marmot	Ladder	4,092	12,680	....	....	16,772	Place measurement
Badger	Ladder	....	....	86,123	3,495	89,618	Place measurement
Culebra	Suction	198,372	....	....	....	198,372	Scow measurement
Total	....	232,809	74,702	88,323	3,495	399,329	
Hydraulic excavation	....	85,000*	....	....	....	85,000	Place measurement
Grand total	....	317,809	74,702	88,323	3,495	484,329	

*Excavated from Canal prism, south of Miraflores lock site.

CHAMÉ SAND EXCAVATION.

Approximately 51,470 cubic yards of sand were excavated at Punta Chamé and delivered at Balboa.

DISTRICT NO. 3—MUNICIPAL AND SANITARY ENGINEERING.

The reservoirs, water mains, sewers, and oil pipe lines were maintained and extended as required to facilitate construction work.

DISTRICT NO. 4—ANCON QUARRY.

PERFORMANCE OF ROCK CRUSHER PLANT.

Length of working day (hours)	8.00
Average number of hours per day (actual working time)	7.25
Average number of cubic yards crushed per hour per working day	260.91
Average number of cubic yards crushed per working hour	323.87
Total output for the month (cubic yards)	61,053.00

Relocation of Panama Railroad.

During the fiscal year 1912, the original line from Gatun to Gamboa and the Gold Hill line were turned over to the Panama Railroad Company. The small amount of work remaining to be done on June 30, 1912, consisted of riprapping the submerged embankments through the Gatun Lake section and installing the bascule bridge at Monte Lirio. The relocation organization was accordingly abolished on that date, and any further work necessary, properly chargeable to the relocation, will be accomplished by the maintenance of way forces of the Panama Railroad Company.

Quartermaster's Department.

Labor—There was some shortage in unskilled labor during the month. The Central Division was in need of pick and shovel laborers.

Buildings—Work on the removal of the Balboa settlement was continued. All families at old Balboa were removed to Ancon. Seventy-two bachelors are still quartered in house No. 27. This building will be removed and reerected. The men will be quartered at East Balboa in the old police station, which has already been removed and reerected, and in the upper floor of the hotel which has been converted into bachelor quarters.

Quarters—Quarters remain congested at Corozal and Ancon. At the former place, all gold quarters are crowded, due to a number of additional men brought to the Isthmus by the McClintic-Marshall Construction Company.

Material and supplies—The value of material received during the month was $975,863.58.. Supplies were delivered by 42 steamers, the total weight of cargo, exclusive of lumber and piling; being 33,268 tons. Reduced cement deliveries have continued. Two cargoes of lumber, aggregating nearly 4,000,000 feet, were received from the Pacific Coast.

Subsistence Department.

The operation of the European laborers' messes, colored laborers' kitchens, and line hotels showed a net profit of $3,627.21. The operation of the Hotel Tivoli showed a net profit of $2,012.98. The net profit on subsistence operations was $5,829.30.

Department of Civil Administration.

During the month, 28 civil and 39 criminal cases were disposed of in the Circuit Courts, and 66 civil and 479 criminal cases in the District Courts.

DIVISION OF POSTS, CUSTOMS, AND REVENUES.

Money order sales for July amounted to $409,873.29, and the fees to $1,936.04. Receipts from stamp and card sales and newspaper postage aggregated $6,089.09. The total collection of revenues made by the division was $18,232.35, and the collection on account of court fines, costs, and fees $2,898.48.

Twenty-seven vessels entered at and a like number cleared from the port of Ancon, and 22 vessels entered at and 23 vessels cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total number of persons arrested was 477, of whom 410 were men and 67 women. Twenty-four nations, or 46 separate states and dependencies, were represented. The total number of arrests for the month was a decrease of 19, as compared with the month of June. Eight convicts were committed to the penitentiary and 14 were discharged, leaving 135 convicts in confinement at the close of the month. The cost of guarding and subsisting the convicts was $2,575.34, and the value of their work on Canal Zone roads was $2,414.20.

DIVISION OF FIRE PROTECTION.

Five fires were reported in the Canal Zone during the month. The damage to private property was $350.

DIVISION OF PUBLIC WORKS.

In the city of Panama, the average daily consumption of water was 1,335,863 gallons, and in Colon, 1,334,255 gallons. The usual inspection and maintenance work in this division was performed during the month.

DIVISION OF SCHOOLS.

The schools were not in session during the month.

Department of Sanitation.

The total number of deaths from all causes among employes was 42. These were divided, as follows: From disease 32, from violence 10, giving the annual average per thousand of 7.88 and 2.46, respectively, on the basis of the number of employes estimated by the Department of Sanitation. The annual average death rate per thousand among employes for the month of July, 1911, was 14.06.

The annual average death rate per thousand in the Canal Zone, and in the cities of Colon and Panama, including both employes and nonemployes, based upon the population as estimated by the Department of Sanitation, was 23.55. The annual average death rate per thousand among the same classes of population for the month of July, 1911, was 26.53.

Segregating the whites from the blacks, the annual average death rate per thousand from disease among employes was: For whites, 6.98; blacks, 8.18, giving a general average for disease of 7.88. For the same month during 1910, the annual average death rate per thousand from disease among whites was 9.51; blacks 9.16, giving a general average of 9.25; and for the same month during 1911, whites 10.37; blacks, 10.27, giving a general average of 10.29.

Among employes during the month, deaths from the principal diseases were, as follows: Dysentery, entamœbic, one; hæmoglobinuric fever, one; lobar pneumonia, six; malaria fever, E. A., two; tuberculosis, nine; leaving 13 deaths from all other diseases, and 10 deaths from external violence.

One case of yellow fever on a ship from Guayaquil, Ecuador, was isolated in Santo Tomas Hospital, the patient dying there on July 14. With this exception, no case of yellow fever, smallpox, or plague originated on, or was brought to the Isthmus, during the month.

Respectfully,
GEO. W. GOETHALS, *Chairman.*

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

CULEBRA.

A return engagement of the Hindoo entertainment company has been arranged for Friday evening, August 23. An entirely new program will be given. Numbers will be repeated by request.

The bowling games played during the week were, as follows: Tuesday, August 8, "Wreckers" vs. "Spreaders"; Wednesday, August 8, "Exploders" vs. "Piledrivers"; Friday, August 16, "Track shifters" vs. "Unloaders."

The standing of the teams at the close of the week was, as follows:

Team.	Won.	Lost.	P. C.
Track shifters	4	2	.667
Wreckers	3	3	.500
Piledrivers	3	3	.500
Unloaders	3	3	.500
Spreaders	3	3	.500
Exploders	2	4	.333

The Gorgona chess team played the Culebra chess team on Saturday evening, August 17, with the following result:

Gorgona.	Won.	Lost.	Culebra.	Won.	Lost.
Dr. Levy	0	2	Dubois	2	0
Varenkamp	0	2	Minner	2	½
Strong	½	1½	Warner	1½	1
Bravo	1	1	Beaman	1	½
Taylor	2	0	Newman	0	2
Moorehead	½	1½	Conner	1½	0
Total	4	8		8	4

GORGONA.

Mr. Watson has returned from the sanitarium and assumed his duties as acting secretary.

A farewell reception was given on Tuesday, August 20, in honor of Mr. T. S. Booz, who has resigned from the service. Local talent provided an evening's entertainment. The members of the clubhouse purchased a Howard watch, which was presented to Mr. Booz.

The moving picture show will be held on Friday, August 23.

The pool tables have been recovered and are in excellent condition.

Fourteen new phonograph records were added recently.

GATUN.

The work of replaning the bowling alleys is progressing satisfactorily. It is expected that the work will be finished in about two weeks.

On Monday, August 12, a movement was initiated to obtain 400 members by September 1. This number has already been realized, and the membership is still increasing.

CRISTOBAL.

The next moving picture show in the series will be held on Saturday night, August 24.

The gymnasium floor will be clear for handball Tuesday and Thursday afternoons from 5 to 7 p. m., and basketball from 8 to 10 p. m.

The ladies' afternoons for bowling are on Wednesdays and Fridays from 2 to 5 o'clock. A prize pennant is offered for the lady making the highest score this month.

Empire defeated the local bowlers two out of three games on Saturday night, August 17, with the following scores:

Empire.				Cristobal.			
Gustavson	246	138	170	Barrett	212	175	156
Gorham	164	152	171	Gibson	150	153	160
Edwards	157	155	204	Collins	176	178	189
Pearson	233	185	177	Buser	148	141	209
Huson	149	169	172	Bullard	191	157	157
Total	949	799	894		877	804	871

During the week, the following high scores were made on the local alleys:

Tenpins—Rosteck, 203; Buser, 202, 231, 200, 216; Gibson, 216, 202; Vanderburg, 211; Bullard, 213; Collins, 210; Beattie, 208; W. Burn, 203; Louch, 201.

Duckpins—Carpenter, 101; Bullard, 102; Barrett, 107; Weidman, 100; Herrington, 100.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 28, 1912. (75th meridian time):

DATE.	High	Low	High	Low
	A.M.	A.M.	A.M.	P.M.
August 22	......	5.14	11.25	5.52
			P.M.	
August 23	12.27	6.30	12.40	7.00
August 24	1.38	7.35	1.45	7.57
August 25	2.30	8.27	2.35	8.42
August 26	3.07	9.10	3.20	9.23
August 27	3.40	9.45	3.50	9.58
August 28	4.10	10.18	4.20	10.32

OFFICIAL CIRCULARS.

Sanitary Work by Construction Divisions.

CULEBRA, C. Z., August 16, 1912.

CIRCULAR No. 183-F-5:

The rules governing the performance of work by the construction divisions for the Department of Sanitation, dated December 1, 1911, are amended, effective this date, as regards "maintenance of drains and ditches," by the addition of the following to paragraph 12 of this order:

> This is not intended to prevent the removal of minor obstructions in unlined sanitary ditches by the regular oiling gangs of the Sanitary Department, with the understanding that this applies only to such work as can be conveniently and economically done by the oiling gangs without increase of the force allotted to each station, and that the regular clearing and grading of ditches shall be performed by the construction divisions.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Promotion for Steamshovel Cranemen.

CULEBRA, C. Z., August 19, 1912.

CIRCULAR No. 387-A:

Steamshovel cranemen will not hereafter be eligible for promotion until they have been satisfactorily tried out as engineers on both Bucyrus and Marion shovels.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Division Engineer, Central Division.

CULEBRA, C. Z., August 19, 1912.

CIRCULAR No. 456:

Effective August 20, 1912, Mr. A. S. Zinn will act as division engineer of the Central Division during the absence of Lieut.-Col. D. D. Gaillard on leave.

GEO. W. GOETHALS, *Chairman.*

Acting Division Engineer, Pacific Division.

CULEBRA, C. Z., August 19, 1912.

CIRCULAR No. 457:

Effective August 21, 1912, Mr. John M. G. Watt will act as division engineer of the Pacific Division during the absence of Mr. S. B. Williamson on leave.

GEO. W. GOETHALS, *Chairman.*

Chagres District of the Central Division Abolished

EMPIRE, C. Z., August 17, 1912.

CIRCULAR No. 318—CENTRAL DIVISION:

By authority of the Chairman and Chief Engineer, the Chagres district of the Central Division, as a separate construction district, will be abolished, effective August 19, 1912.

Effective the latter date, all dumping operations, north of Gamboa, on what will be hereafter known as the relocation dumps, will be under the jurisdiction of Mr. Rance Ferguson, general foreman, who will report to and receive instructions from the division engineer, Central Division.

D. D. GAILLARD, *Division Engineer.*

Chief Clerk, Central Division.

EMPIRE, C. Z., August 17, 1912.

CIRCULAR No. 319—CENTRAL DIVISION:

During the absence of Mr. W. J. Beam, chief clerk, Central Division, on leave of absence, the duties of chief clerk will be assumed by Mr. A. E. Bronk, general inspector, in addition to his regular duties as general inspector.

Effective August 21, 1912.

D. D. GAILLARD, *Division Engineer.*

Acting Chief Timekeeper, Central Division.

EMPIRE, C. Z., August 20, 1912.

CIRCULAR No. 320—CENTRAL DIVISION:

During the absence of Mr. H. A. Haywood, chief timekeeper, Central Division, on leave of absence, the duties and responsibilities of that position will be assumed by Mr. Charles J. Dibowski, with the title of acting chief timekeeper.

Effective August 21, 1912. A. E. BRONK,
General Inspector.

Approved: D. D. GAILLARD,
Division Engineer.

Band Concert.

A band concert will be given by the Isthmian Canal Commission Band at Hotel Tivoli, Ancon, C. Z., Sunday, August 25, 1912, at 8 p. m. The program follows:

1. March—*Hero of the Isthmus* ....Lampe
(Respectfully dedicated to Col. Geo. W. Goethals.)
2. Selection—*Dr. De Luxe*..................Hoschna
3. Waltz—*Girls of Baden*.....................Komzak
4. Overture—*Hungarian Lustspiel*.........Keler Bela
5. Operatic potpourri—*The Broadway Review*..............................Lampe
(Extract from the latest Broadway hits.)
6. (*a*) —*Oh, You Beautiful Doll*......Ayer and Moret
(*b*)—*There's a Girl in Havana*....Goetz and Sloane
7. Grand fantasie—*Home, Sweet Home, the World Around*....................Lampe
8. Medley—*In the Shadows*..............Williams
9. March—*Stars and Stripes*................Sousa

OLIVER KIMBALL, *Acting Musical Director.*

The next concert will be given at Gatun, September 1.

COMMISSARY DEPARTMENT.

The commissaries are open during the following hours:

Cristobal, 8 a. m. to 12.30 p. m., and 2 to 7 p. m.
Balboa, 8 a. m. to 12.30 p. m., and 2.30 to 7 p. m.
Ancon, 8 a. m. to 1 p. m., and 3 to 6 p. m.
All others, 8 a. m. to 1 p. m., and 3 to 7 p. m.

Cold Storage Prices.

The following changes have been made in the list of cold storage articles as of August 14:

Fresh eggs, advanced to 29 cents by the dozen; 15 cents by the half dozen.
Fresh salmon, advanced to 22 cents per pound.
Cucumbers, advanced to 9 cents per pound.
Egg plant, out of stock.
Tomatoes, advanced to 7 cents per pound.
Apples, out of stock.

Rainfall from August 1 to 17, 1912, Inclusive.

STATIONS.	Maximum in one day.	Date.	Total for period.
Pacific Section—	*Ins.*		*Ins.*
Ancon	1.31	5	4.61
Balboa	1.51	5 & 6	5.50
*Miraflores	1.15	6	3.97
Pedro Miguel	1.46	16	4.22
Rio Grande	1.15	17	5.55
Central Section—			
Culebra	1.35	17	5.39
*Camacho	1.67	16	4.45
Empire	.88	4	4.06
Gamboa	1.99	2	6.20
*Juan Mina	.63	12	3.57
Alhajuela	1.72	6	6.75
*El Vigia	2.78	6	6.62
*Gorgona	1.41	2	4.05
*Frijoles	.86	3	3.80
*Monte Lirio	.87	14	2.83
Atlantic Section—			
Gatun	3.35	3	7.41
*Brazos Brook	1.92	3	6.27
Colon	.85	7	3.03
†Porto Bello	.74	12	†2.00

*Standard rain gage—readings at 5 p. m., daily. Automatic rain gage at unstarred stations—values midnight to midnight. †To 5 p. m., August 16.

Stages of the Chagres.

Maximum heights of the Chagres River for the week ending midnight, Saturday, August 17, 1912. All heights are in feet above mean sealevel.

DAY AND DATE.	STATION.			
	Vigia	Alhajuela	Gamboa	Gatun Lake.
Sun., August 11	126.0	92.5	44 5	32.6
Mon., August 12	128.1	94.1	46.2	32 3
Tues., August 13	127.2	93.7	46.2	32.2
Wed., August 14	127.3	92.7	44.6	32.1
Thurs., August 15	128.0	94.0	46.4	32.0
Fri., August 16	127.1	93.5	46.4	32.0
Sat., August 17	128.0	94.0	46.2	32.1
Height of low water to the nearest foot	125.0	91.0	44.0	

Auction of Fire Horses at Cristobal.

Three fire horses, which are no longer necessary in the fire department on account of the new automobile fire engines, will be offered for sale to the highest bidder, for cash, at the Cristobal fire station, Saturday afternoon, at 2 p. m., September 7, 1912. The horses are now at the Cristobal fire station and may be inspected by any one interested. The three horses were purchased in the United States at a cost of $250 each. Their weight is about 1,300 pounds; color, bay; height, about 15½ to 16½ hands. Right is reserved to reject any or all bids.

C. E. WEIDMAN, *Fire Chief.*

Auction Sale of Calves and Dairy Cow at Ancon Hospital Dairy.

On Saturday, August 24, at 10 a. m., there will be sold at public sale at the Ancon Hospital dairy, ten calves between the ages of one and two and one-half months, and one dairy cow about five years old. Terms of sale, cash.

The dairy is located near the insane asylum buildings in the rear of the hospital grounds.

CHAS. F. MASON, *Superintendent.*

MOVEMENT OF OCEAN VESSELS.

The following is a list of sailings of the Panama Railroad Steamship Company; of the Royal Mail Steam Packet Company; of the Hamburg-American Line, and of the United Fruit Company's line:

NEW YORK TO CRISTOBAL.

Advance	P. R. R.	Thursday	Aug.	15
Panama	P. R. R.	Wednesday	Aug	21
Allianca	P.R.R.	Tuesday	Aug.	27
Colon	P. R. R.	Tuesday	Sept.	3
Advance	P. R. R.	Monday	Sept.	9
Panama	P. R. R.	Saturday	Sept.	14
Allianca	P. R. R.	Friday	Sept.	20

CRISTOBAL TO NEW YORK.

Colon	P. R. R.	Wednesday	Aug.	21
Advance	P.R.R.	Tuesday	Aug.	27
Panama	P. R. R.	Tuesday	Sept.	3
Allianca	P. R. R.	Sunday	Sept.	8
Colon	P. R. R.	Sunday	Sept.	15
Advance	P. R. R.	Saturday	Sept.	21
Panama	P. R. R.	Friday	Sept.	27
Allianca	P. R. R.	Thursday	Oct.	3

NEW YORK TO COLON.

Metapan	U. F. C.	Wednesday	Aug.	14
Oruba	R. M.	Saturday	Aug.	17
Prinz Sigismund	H.-A.	Saturday	Aug.	17
Tivives	U. F. C.	Saturday	Aug.	17
Zacapa	U. F. C.	Wednesday	Aug.	21
Prinz Joachim	H.-A.	Saturday	Aug.	24
Thames	R. M.	Saturday	Aug.	31
Almirante	U. F. C.	Wednesday	Aug.	28
Carrillo	U. F. C.	Saturday	Aug.	31
Prinz Eitel Friedrich	H.-A.	Saturday	Aug.	31
Santa Marta	U. F. C.	Wednesday	Sept.	4
Prinz August Wilhelm	H.-A.	Saturday	Sept.	7
Turrialba	U. F. C.	Saturday	Sept.	7
Metapan	U. F.C.	Wednesday	Sept.	11
Trent	R. M.	Saturday	Sept.	14
Tivives	U. F. C.	Saturday	Sept.	14
Prinz Sigismund	H.-A.	Saturday	Sept.	14
Zacapa	U. F. C.	Wednesday	Sept.	18

COLON TO NEW YORK.

Santa Marta	U. F. C.	Thursday	Aug.	22
Prinz August Wilhelm	H.-A.	Monday	Aug.	26
Turrialba	U. F. C.	Tuesday	Aug.	27
Prinz Sigismund	H.-A.	Monday	Sept.	2
Trent	R. M.	Tuesday	Sept.	3
Tivives	U. F. C.	Tuesday	Sept.	3
Zacapa	U. F. C.	Thursday	Sept.	5
Prinz Joachim	H.-A.	Monday	Sept.	9
Sixaola	U. F. C.	Tuesday	Sept.	10
Almirante	U. F. C.	Thursday	Sept.	12
Prinz Eitel Friedrich	H.-A.	Monday	Sept.	16
Magdalena	R. M.	Tuesday	Sept.	17
Carrillo	U. F. C.	Tuesday	Sept.	17

NEW ORLEANS TO COLON.

Abangarez	U. F. C.	Saturday	Aug.	17
Heredia	U. F. C.	Wednesday	Aug.	21
Atenas	U. F. C.	Saturday	Aug.	24
Parismina	U.F. C.	Saturday	Aug.	31
Orleanian	U. F. C.	Wednesday	Sept.	4
Abangarez	U. F. C.	Saturday	Sept.	7

COLON TO NEW ORLEANS.

Parismina	U. F. C.	Thursday	Aug.	22
Abangarez	U. F. C.	Thursday	Aug.	29
Atenas	U. F. C.	Thursday	Sept.	5
Parismina	U. F. C.	Thursday	Sept.	12
Orleanian	U. F. C.	Thursday	Sept.	12

Panama Railroad Company's steamers sail from Pier 11, Cristobal, at 3 p. m.

Royal Mail steamers leave for New York on alternate Tuesdays, at 10 a. m.; for Southampton on alternate Tuesdays, at 10 a. m.

United Fruit Company's ships for New Orleans direct, leave on Thursdays, at 3 p. m.; for New Orleans, via Limon, on Thursdays, at 2. p. m.; ships for New York via Kingston, on Tuesdays, at 2 p. m., and Thursdays at 2 p. m.; for Bocas del Toro, on Mondays at 2 p. m.

The following vessels arrived at, or departed from, the port of Balboa during the week ending August 17:

Arrivals—August 11, *Newport*, from San Francisco; August 11, *Manavi*, from Buenaventura; August 11, *U. S. S. Justin*, from Corinto; August 12, *Santa Maria*, from Port Harford; August 12, *Ucayali*, from Callao; August 14, *Huasco*, from Valparaiso; August 17, *Barracouta*, from Central America.

Departures—August 11, *Mantaro*, to Callao; August 12, *U. S. S. Justin*, to Corinto; August 12, *Ecuador* to Guayaquil; August 12, *Quilpue*, to Valparaiso; August 14, *Santa Maria*, to Port Harford; August 14, *Peru* for Guayaquil; August 15, *City of Panama*, to San Francisco; August 16, *Manavi*, to Buenaventura.

LOST—On the special boat train from the *Allianca*, August 9, a silk raincoat, with initials "G. A. B." in lower left hand corner, left in rack of the first first-class car. Finder kindly communicate with office of Assistant Chief Engineer, Culebra.

UNIVERSITY OF FLORIDA
3 1262 04299402 9

TC
774
A1
F

LATIN
AMERICA